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OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n.)

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CASE REPORTS

In this number of the Journal we are publishing above the average number of case reports for one issue. In one sense these represent an accumulation, by reason of the fact that none were published in the previous issue, almost the entire amount of space available in March having been given to the proceedings of the United States Live Stock Sanitary Association. On the other hand, there has been a noticeable increase in the number of case reports submitted for publication by our members during the past few months. We most sincerely hope that this will continue.

If there is any kind of material of which we do not receive as much as we would like to, case reports come in that category. We know beyond any question of a doubt that the rank and file of our practitioners like to read short, interesting case reports. But, here's the rub. The very men upon whom we must depend for supplying this kind of material are the men who say they are too busy or do not have the time to write case reports for publication—the practitioners. As we have said more than once, we can not ask the veterinarian teaching in the class-room, or his colleague working in the laboratory, or the man engaged in sanitary control work, to write up case reports. This has to be

done by the men who see and treat these cases; the men who get the information at first hand; the men who are most likely to be the best judges of whether or not the case or condition is worth reporting.

It does not necessarily follow that there is unanimity of opinion as to what constitutes the best kind of a case report. There is considerable latitude, when it comes to subject matter to be published under the head of case reports. Dr. Jones' idea of a good case report may be entirely different from what Dr. Smith's idea is. This is as it should be. As in other things, there would not be very much interest in the question, if everybody thought alike.

It is not unusual, in discussing this subject with veterinarians, for someone to apologize for his lack of literary ability and give that as his excuse for not writing up an occasional report of an interesting case. A short time ago, a veterinarian very frankly confessed that his ability as a writer was so far inferior to that of other contributors to the JOURNAL that he would be ashamed to have his name appear under anything that he might write. Acknowledging the compliment paid the authors of papers and reports published in the JOURNAL, we offered our help to this veterinarian in an editorial capacity, if he would supply the essential facts of a good case report. The veterinarian accepted our offer and his case report has been published in the JOURNAL. Nobody besides the veterinarian and the Editor will ever know that the former received any assistance from the latter in the preparation of his report. We take this occasion to make known that this is a standing offer and the larger the number of our practitioners who take advantage of it the better we will like it.

Returning to the question: "What is a good case report?" It may be stated that the answer will vary with the ideas of persons attempting to define the term. One veterinarian will take a case of a very common, ordinary, everyday disease or condition and write up some phase of it in a way that will result in a highly interesting report. Another veterinarian will wait until he has encountered what he believes to be an absolutely new and hitherto unknown disease or condition before he will think that he has something worth reporting. Ever since there has been such a thing as a case report, there have been those veterinarians whose idea of a good case report was to write up the finding of a monstrosity of some kind, such as a calf with two heads or a pig with two tails. Some veterinrians have a leaning toward

parasites and their idea of a good case report would be a description of a particularly long worm or the finding of some well-known parasite in an unusual location. All of these cases have their interest and their value.

There are certain essentials of a good case report. Perhaps the outstanding one is accuracy of description. This is particularly true of cases in which parasites are mentioned. These should be identified and named by a competent authority, if the report is to be of the greatest possible value. The careful selection of pathological terms to describe the conditions found is highly essential. It sometimes happens that the author, in his desire to write up his report in scientific fashion, inadvertently makes use of an incorrect term. It is not always possible for the Editor to detect errors of this kind, although occasionally such errors are self-evident. On the other hand, we dislike to see a veterinarian write up a case report and make use of terms and expressions that even some laymen would hesitate to use. Keep in mind that the report is going to be published in a scientific journal and is going to be read by scientific men who will know what the author is writing about when he uses scientific terms.

Nothing adds to the value of a case report like a photograph or two to accompany it. Several well-known veterinarians have become rather proficient with the camera and their illustrated reports have embellished our veterinary journals for quite some time. However, the mere fact that a veterinarian was unable to secure a photograph of a certain condition should not stop him from reporting the case, if it is sufficiently interesting. It is not unusual to receive a letter from a veterinarian in which he refers to a case and says that he would have been very glad to have prepared a report for publication, but he did not have an opportunity to photograph the case or perhaps the case or condition was photographed and the pictures were not suitable for reproduction. Our thought in this connection is simply this: Any case that is worth writing up is acceptable, either with or without accompanying illustrations. If these are available just so much the better.

This is the first time that we have expressed ourselves editorially on the subject of case reports. During the past few years, we have asked hundreds of veterinarians to contribute reports occasionally, either in our letters or when talking to veterinarians at meetings. Several years back, we made a calculation which showed that, if every member of the A. V. M. A.

would contribute a report of some kind that would require one page for its publication, these reports would take up approximately thirty average-size issues of the JOURNAL for their publication. In other words, it would take us two years and a half to publish these reports, to the exclusion of everything else. We mention this again to show you how little would be necessary upon the part of each individual member to supply material to keep the JOURNAL going for the time mentioned. Think it over.

EXECUTIVE BOARD ELECTION

Ballots requesting nominations for member of the Executive Board of the A. V. M. A. for District No. 1 have been mailed to all paid-up members in Canada. The term of office of the present incumbent, Dr. George Hilton, of Ottawa, will expire at the close of the 1927 meeting in Philadelphia and the election now in progress is for the purpose of electing a member of the Executive Board to represent District No. 1 for the five-year term, beginning September 17, 1927. Each paid-up member in Canada has the privilege of nominating a candidate for this office. The nominating polls will remain open until May 16, or until such time as all nominating ballots have been cast. The five members receiving the highest number of nominating ballots will constitute the ticket to be voted upon later. Election ballots will be mailed to all paid-up members immediately following the counting of the nominating ballots cast. Members in Canada who have not paid their dues for the current year are urged to do so immediately, so that they may be eligible to vote in this election.

ETHICS INVOLVED

One of our members has asked an opinion relative to the ethics involved in treating cases on a no-cure-no-pay basis, referring specifically to an advertisement which appeared recently in one of the veterinary journals, in which a mineral mixture factory suggested that veterinarians sell a certain nostrum to their clients on a no-cure-no-pay basis. Incidentally it was pointed out that a profit of over 600 per cent could be made on all such transactions.

The code of ethics of the A. V. M. A. does not cover the point specifically. However, it has usually been considered to be unprofessional and in very poor taste for a veterinarian to guarantee

either a cure or the outcome of an operation. Many veterinarians would be very much offended if any one even suggested that they treat their cases on a no-cure-no-pay basis. So far as nostrums sold on such a basis are concerned, it is usually an indication of some inherent shortcoming they possess.

APPLICATIONS FOR MEMBERSHIP

The rate at which applications for membership have been coming in is very satisfactory. It is even more than that—it is highly encouraging. Especially so in view of the fact that except in a very few states, our resident secretaries have not yet started their annual campaigns for new members. The Philadelphia meeting is almost six months away and during that time we expect to receive quite a large number of applications from veterinarians in the Middle Atlantic states, a territory that has not had a meeting of the A. V. M. A. for nine years. Proximity of an annual convention of the A. V. M. A. has proved to be about as great a stimulus as we have for getting new members.

During the six months following the Lexington meeting we listed 73 applications, as compared with 58 during the same period a year previously. This month we are listing fifteen more. These 88 applications were received from veterinarians located in 27 different states, the District of Columbia, one Canadian province and the Philippine Islands, showing the wide distribution of the applicants. Indiana leads with nineteen applications, reflecting the activity of Resident Secretary Muecke and the appreciation of the Hoosier veterinarians for the election of Dr. Sigler as president of the A. V. M. A.

In looking over the official monthly journal of another national organization a short time ago, we came across a slogan that was being used in a membership drive:

Every Member Get a Member!

It does not take much ability as a mathematician or a lightning calculator to be able to figure just what would happen to our membership roll if every member would obtain one new member. It's worth trying, anyhow. If you have not been instrumental in obtaining at least one new member during the past year, make up your mind that you will do so between now and the time of the Philadelphia meeting.

Do not forget the conditions under which applications are now being handled. Section 6 of Article 2 of the by-laws reads:

Applications for membership shall be made upon blanks furnished by the Association, in the handwriting of the applicant, and must be endorsed by two members of the Association in good standing, one of whom must be a resident of the state, province or territory in which the applicant resides. Applications must be accompanied by the membership fee of $5.00 and dues pro rata for the balance of the fiscal year current, as stated on the application blank. Applications must be filed with the secretary and examined by him for correctness and completeness as far as available information will allow. After such approval by the secretary, the latter will cause to be published in the official JOURNAL, as soon thereafter as possible, said application with name and address of applicant, college and year of graduation, and names of vouchers. If no objections shall be filed with the secretary, as against the applicant being admitted to membership in the Association, his name shall again be listed in the next issue of the JOURNAL, and if no objections shall have been filed within thirty days after the second publication of the name of the applicant, he shall automatically become a member and shall be so enrolled by the secretary, and membership card issued. If any objections be filed against any applicant, either on first or second notice, said application will be referred to the Executive Board for consideration.

The amount that shall accompany an application filed this month is $8.75, which covers membership fee and dues to January 1, 1928, including subscription to the JOURNAL.

FIRST LISTING

AMADON, ROGER S. School of Vet. Med., Univ. of Penn., Philadelphia, Pa.
D. V. M., Ohio State University, 1916
Vouchers: G. A. Dick and C. J. Marshall.

CUNNINGHAM, JOHN ROBERT Summerside, P. E. I.
B. V. Sc., Ontario Veterinary College, 1915
M. R. C. V. S., Royal (Dick) Veterinary College (Edin.), 1921
Vouchers: W. H. Pethick and C. J. Bousfield.

DIETRICH, LEROY E. 828 Porter Ave., Wichita, Kans.
D. V. M., Kansas City Veterinary College, 1917
Vouchers: Edwin J. Frick and R. R. Dykstra.

DURR, EDDIE HARRY 320 Agricultural Bldg., Raleigh, N. C.
D. V. M., Alabama Polytechnic Institute, 1924
Vouchers: L. J. Faulhaber and Wm. Moore.

FOLEY, ODA FRANKLIN Bridgewater, Va.
D. V. M., McKillip Veterinary College, 1915
Vouchers: I. D. Wilson and E. J. Will.

HENLEY, CLAUDE A. 232 S. East St., Jacksonville, Ill.
D. V. M., Ohio State University, 1925
Vouchers: H. C. Rinehart and W. H. Welch.

KIXMILLER, JOHN L. 305 High St., Logansport, Ind.
D. V. M., Indiana Veterinary College, 1915
Vouchers: F. J. Muecke and T. A. Sigler.

LONG, CHARLES EARL Blue Mound, Kans.
D. V. M., Kansas State Agricultural College, 1917
Vouchers: E. J. Frick and R. R. Dykstra.

MUSSELMAN, GEORGE W. Vandalia Ave., Denver, Ind.
M. D. V., McKillip Veterinary College, 1911
Vouchers: A. F. Ferguson, G. M. Wagaman and F. J. Muecke.

SANDERS, CLAUDE C. 2134 Broadway, Indianapolis, Ind.
D. V. M., Indiana Veterinary College, 1916
Vouchers: F. J. Muecke and T. A. Sigler.

SPAETH, ERNEST P. Gillette, Wyo.
V. M. D., University of Pennsylvania, 1898
Vouchers: C. J. Marshall and Cecil Elder.

STARKEY, JAY RALPH — Goshen, N. Y.
D. V. M., Kansas State Agricultural College, 1922
Vouchers: J. F. DeVine and R. R. Dykstra.

THOMAS, WILLIAM H. — R. F. D. No. 3, St. Joseph, Mo.
D. V. M., St. Joseph Veterinary College, 1913
Vouchers: R. C. Moore and A. J. Munn.

TURNER, ROBERT C. — 17½ S. Orange Ave., Orlando, Fla.
D. V. M., Terre Haute Veterinary College, 1911
Vouchers: M. V. Springstun and A. L. Shealy.

WELLS, JOHN RAYMOND — City Health Office, West Palm Beach, Fla.
V. M. D., University of Pennsylvania, 1922
Vouchers: A. L. Shealy and Thos. J. Mahaffy.

Applications Pending

SECOND LISTING

Collins, Donald Keith, 43 Dartmouth St., Malden, Mass.
Dietrich, M. L., Newton, Kans.
Groth, Harold H., 80 No. Daisy Ave., Pasadena, Calif.
Hendrickson, John M., State School, Farmingdale, N. Y.
Johnson, Walford J., Box 311, Lincoln, Nebr.
Johnston, Roy C., Monticello, N. Y.
Merrill, Robert A., Clara City, Minn.
Monk, T. A., Goldsboro, N. C.
Montooth, J. L., Morris, Ill.
Myers, Neil H., 215 N. Walnut St., Wilmington, Ohio.
Seaman, Harrison J., 203 Cherry St., Wauseon, Ohio.
Sullivan, M. Wallace, Marcellus, N. Y.
Tucker, Frank C., Claypool, Ind.
Wright, John L., Salisbury, Mo.

DR. OTTO FAUST DIES SUDDENLY

Word has been received of the sudden death of Dr. Otto Faust, eminent practitioner of Poughkeepsie, N. Y., and one of the best-known members of the A. V. M. A. Detailed obituary notice will be published in the May issue of the JOURNAL.

COMING VETERINARY MEETINGS

San Diego-Imperial Veterinary Medical Association. San Diego, Calif. April 6, 1927. Dr. W. G. Oliver, Secretary, 3821 Arizona St., San Diego, Calif.

New York City, Veterinary Medical Association of. Academy of Medicine, 5th Ave. & 103rd St., New York, N. Y. April 6, 1927. Dr. C. P. Zepp, Secretary, 128 W. 53rd St., New York, N. Y.

Chicago Veterinary Society. Great Northern Hotel, Chicago, Ill. April 12, 1927. Dr. J. B. Jaffray, Secretary, 2956 Washington Blvd., Chicago, Ill.

Maine Veterinary Medical Association. Bangor House, Bangor, Me. April 13, 1927. Dr. C. F. French, Secretary, Rockland, Me.

Southeastern Michigan Veterinary Medical Association. Detroit, Mich. April 13, 1927. Dr. H. Preston Hoskins, Secretary, 716 Book Bldg., Detroit, Mich.

Kansas City Association of Veterinarians, New Baltimore Hotel, Kansas City, Mo. April 18, 1927. Dr. J. D. Ray, Secretary, 400 New Centre Bldg., Kansas City, Mo.

Keystone Veterinary Medical Association. Philadelphia, Pa. April 27, 1927. Dr. C. S. Rockwell, Secretary, 5128 Chestnut St., Philadelphia, Pa.

Connecticut Veterinary Medical Association. New Haven, Conn. May 4, 1927. Dr. Geo. E. Corwin, Secretary, 11 Warrenton Ave., Hartford, Conn.

Southwestern Michigan Veterinary Medical Association. Kalamazoo, Mich. May 12, 1927. Dr. John A. Schaefer, Secretary, Bangor, Mich.

Central Michigan Veterinary Medical Association. Jackson, Mich. May 25, 1927. Dr. W. N. Armstrong, Secretary, Concord, Mich.

California State Veterinary Medical Association. Sacramento, Calif. June 13-14-15, 1927. Dr. E. H. Barger, Secretary, University Farm, Davis, Calif.

Lake States Tuberculosis Eradication Conference. Olds Hotel, Lansing, Mich. June 27-28, 1927.

American Veterinary Medical Association. Bellevue-Stratford Hotel, Philadelphia, Pa. Sept. 13-14-15-16, 1927. Dr. H. Preston Hoskins, Secretary, 716 Book Bldg., Detroit, Mich.

CLAIMS CHOLERA CURE

Farmers of Illinois should have little to fear from hog cholera this year, if press reports are correct. The following recently appeared in the Morrison (Ill.) *Sentinel:*

> Lanark has a man who claims he has discovered a medicine that will cure hog cholera. He also says that it will cure swine plague, white scours in pigs and the flu. Farmers are going there from 25 to 30 miles away to learn more about the medicine. One farmer claims that it was used in a herd of 150 head of hogs without the loss of one pig.

More reassuring should be the following announcement, which appeared in the Lincoln (Ill.) *Star:*

> A contract for 300,000 cubic centimeters of serum to fight hog cholera in Logan county was placed yesterday in Chicago by J. H. Checkley, farm adviser.
>
> At a recent meeting of the executive committee of the Farm Bureau, a plan to assist farmers in combating this dreaded disease in hogs from which Logan farmers lost thousands of dollars the past six months, was sponsored whereby serum would be kept at the local Farm Bureau office.

DIGESTIVE DISTURBANCES OF CATTLE*

By M. G. FINCHER, *Ithaca, N. Y.*

Department of Medicine, Obstetrics, and Amublatory Clinic, N. Y. State Veterinary College, Cornell University

It is commonly accepted that accurate records on a series of cases of any disease afford a sound basis for discussion. In the ambulatory clinic of the New York State Veterinary College it is possible to record observations on nearly all common diseases and, on an average, 140 cases of digestive disturbances in cattle are seen yearly. In this discussion I will consider the most common ones treated in the year 1925-26, using the classification shown in table I.

GASTRO-INTESTINAL CATARRH

Among the cases of primary indigestion, a few are classed as acute intestinal (or gastro-intestinal) catarrh, although they are not particularly different from acute indigestion. They are called catarrh because the result of the food stasis or other cause is an acute, mild, catarrhal inflammation of the abomasum and intestines, while the fore-stomachs are less disturbed than in other types.

Occurrence: Last year this group constituted about 10 per cent of the digestive disturbances treated. It was seen in cattle of all ages, although when found in very young calves it was classed under diseases of the newborn. The seasonal occurrence last year, like most years, showed that the disease was not seen between the months of July and November. Over one-third of the cases occurred in April.

Etiology: There is a variety of causes, including over-feeding, exposure to cold, cold water, frozen corn-stalks, fatigue from being driven, advanced pregnancy (possibly a predisposing cause), sour silage in the bottom of a silo, and over-eating on green oats. There was one case in which it constituted a preliminary symptom of malignant head catarrh and several where the cause was unknown. These cases where the cause is unknown should, according to Hutyra and Marek,[1] be assigned to an infection. If we are unable to locate any error in the diet

*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

sufficient to account for the condition, an infection or traumatic gastritis is suspected.

During the last winter we saw 96 or more cases of so-called winter dysentery, in which the *cause* was probably an infectious

TABLE I.—*Digestive disturbances of cattle*

DIAGNOSIS	TREATED	RECOVERED	DIED	COMPLICATED	COMPLICATIONS	SECONDARY TO
Acute intestinal catarrh	17	14	3	3	Traumatic gastritis (2)	Malignant head catarrh (1)
Winter dysentery	96	6	0	0		
Acute indigestion	71	70	1	5	Mastitis (1) Meningitis (1) Traumatic gastritis (2)	Retained placenta (1)
Gastro-enteritis or enteritis	16	5	11	7	Meningo-encephalitis (1) Septic metritis (1) Traumatic gastritis (1)	Hemorrhagic septicemia (1) Necrobacillosis (1) Pyelonephritis (1) Septicemia—*B. pseudomonas* (1)
Traumatis gastritis	43	15	28	15	Gastro-enteritis (1) Metritis (5) Metritis and mastitis (3) Metritis and nephritis (1) Mastitis (1) Pyelonephritis (1) Ruptured uterus—abortion (1)	Acute tympany (1) Ruptured rumen and hepatitis (1)
Displacements	3	1	2	0		
Total	246	201	45	30		

agent, as it soon attacked many or all of the cattle in a herd and was seen in several herds at once during the winter and spring. This, when seen in an individual cow, is a catarrh of the intestines with persistent dysentery.

In one herd a condition similar to this was seen only in the best producers which were receiving a very heavy grain ration. The grain contained too high a percentage of sodium chlorid and apparently caused rather severe intestinal catarrh.

Symptoms and diagnosis: The symptoms in ordinary cases of intestinal catarrh which terminate in recovery are quite variable. There may be dullness; partial or complete anorexia; temperature, 100°-106° F.; pulse, 60-85; and a gradual decrease in the milk-flow. The digestive tract usually shows no increase in size, and the rumen is fairly active. There may be an increased intestinal peristalsis with diarrhea, or a decreased peristalsis with little or no feces, depending on the causative agent and the time the case has gone untreated. The most diagnostic symptom is the passage of a decreased amount of firm feces coated with mucus, or of thin feces mixed with a moderate amount of mucus or blood. In severe cases bordering upon fatal enteritis there may be no feces, or watery feces mixed with mucus and blood, passed involuntarily.

In the presence of the above symptoms, and with a history that the animal has been sick only a short time, and has a cause in the diet, a correct diagnosis is usually possible. The diagnosis, however, can not be made positively until the termination of the case is known. The cases diagnosed as intestinal catarrh last year recovered, with the exception of three where the condition was apparently only a symptom of traumatic gastritis in two, and of malignant head catarrh in one.

Treatment: The treatment of this type of indigestion is not different from other forms except that it seems that a large dose of some irritant purgative may in certain cases lead to death by enteritis. The most severe case in this group last year was one that had started with a mild dysentery and had been given a large dose of Epsom salt before we were called. We use salts occasionally in this condition, but not when a diarrhea is present. Intestinal antiseptics (especially creolin, in 6-dram doses, in so-called winter dysentery), stimulants, and liquid petrolatum in doses of one pint to two quarts twice daily, give satisfactory results. In cases occurring on dry feed, a laxative diet of molasses, fresh mangel-beets, and bran mashes will aid in hastening the return to normal milk-production.

Acute Indigestion

Synonyms: Simple or primary indigestion, atony of the rumen, impaction of the rumen or omasum, acute indigestion with tympany.

Primary indigestion is defined as an atony of the fore-stomachs, induced by an over-loading of the rumen or reticulum with food or indigestible substances. Depending on the material, it results in impaction of the rumen, tympany or bowel catarrh. Less often food accumulates in the omasum or abomasum.

Occurrence: About 70 cases of acute indigestion occur annually and these constitute nearly 50 per cent of the digestive disturbances seen. The seasonal occurrence was somewhat like that for catarrh, in that the largest number were seen in April, and that none were seen in August. But it was surprising to find that there were six cases treated in July. There were only six cases each month during January, September and October.

Udall[2] states: "In our experience primary indigestion is practically unknown among grazing cows. For this reason a diagnosis of severe primary indigestion between the months of May to September is made with caution. In this period it is possible for a cow to obtain spoiled food, or unreasonable amounts of food to which she is not accustomed, but these occasions are not frequent and when they do occur are usually recognized."

Of the six cases occurring last July, one was not at pasture. The other five did not have a history of access to unlimited amounts of food but two did have a clover pasture; so that the seasonal occurrence is very variable and is not an absolute guide in drawing conclusions as to a diagnosis. A cow, however, showing symptoms of indigestion while regularly at pasture, should be suspected of having some other condition.

History and etiology: In acute indigestion it is often difficult to obtain an accurate history, but if this is possible it is often more helpful in determining the procedure than any symptoms that the cow may show. It is essential to make careful inquiry regarding the character of the food, the number of days the patient has shown anorexia, the amount of decrease in the milk-flow, the suddenness with which lactation ceased, and regarding previous attacks of indigestion. Almost invariably if none of the well-known causes are given, and the cow has suddenly shown a decrease in the amount of milk with anorexia lasting several days, a careful examination will reveal some condition to which the apparent indigestion is secondary.

Studies of the foods and changes in diet in the cases considered showed that there were no cases due to unlimited eating of such heavy grains as ripe buckwheat, wheat and corn; but a few did consume large amounts of oats, both whole and ground. In former years the cases which terminated in death by gastro-enteritis were those that had over-eaten on such heavy material as buckwheat and corn, while those last year made a prompt recovery after eating oats.

Symptoms: In cattle with acute indigestion any unusual attitude may be expected. The majority of cases are depressed, but a few show nervous symptoms by champing the jaws, with salivation that resembles foaming at the mouth, or by assuming an unusual position on the knees, with the rear parts in the normal position. Others show the effects of intoxication on apples and other foods by staggering, and a few are completely paralyzed and lie prostrate as in parturient paresis. If there is a tendency to continue to lie down in a normal position for several days it is suggestive of traumatic peritonitis or dropsy of the fetal membranes.

Great importance has been assigned to the other general symptoms in making a diagnosis in obscure cases. In this group of 70 cases the temperature ranged from 100°-105.5° F. but in the majority of cases it was 103° or slightly above. The pulse-rate was above 100 per minute in only four cases, and 30 per cent of the cases were recorded as 80 or more, so that in about 70 per cent the pulse was less than 80 per minute. An examination of the mucous membranes and other general symptoms were not particularly useful since little change was present.

A digestive disorder is usually suspected by the owner because of anorexia, absence of rumination, and changes in the feces. Careful examination of the digestive system nearly always shows that the contractions of the rumen are decreased in frequency, unless it is a case of acute tympany, when the rumen is often hyperactive for a time after the gas is removed. The consistency of the rumen is most often doughy or firm, but when green, fermentable materials are present there is an unpleasant combination of soft food mixed with gas. The size of the abdomen varies with the cause, and the time of observation. Intestinal peristalsis is variable, and the feces are usually firm and sparsely passed. Diarrhea is not infrequent soon after the ingestion of large amounts of green food.

Diagnosis: Much has been written about the diagnosis and differential diagnosis of indigestion, but it is agreed that most typical cases of indigestion may be diagnosed by the symptoms just mentioned, and that an early positive diagnosis of such other diseases as traumatic gastritis is impossible by the symptoms seen at a single call early in the course of the disease. The course, or the time required to effect recovery in a case, and symptoms that may develop later make a diagnosis possible.

There are many other conditions that need to be differentiated, such as parturient paresis, mastitis and metritis. In these, atony of the digestive tract is usually secondary. The date of parturition and condition of the udder and uterus should be considered carefully. One case last year, showing tympany and colic, was also a trifle wabbly in her rear parts when walked. She was able to get up and lie down easily and frequently. She had calved normally the day before. Inflation of the udder and a small dose of stimulants gave prompt recovery. We believe that medication orally in these cases might be dangerous and that collapse would follow if the udder were not inflated. These secondary symptoms of indigestion will frequently disappear after an infected udder is given attention, or after an accumulation of exudate in the uterus is removed. Such cases require careful diagnosis in dairy cattle.

Treatment: Stimulation of the whole system, especially the digestive apparatus, along with the use of laxatives, anti-ferments and carminatives, gave satisfactroy results last year. Stimulation was produced in various ways, but strychnin sulphate in 1-grain doses, at 4- to 6-hour intervals orally, was nearly always used, until anorexia ceased. Camphorated oil intramuscularly, aromatic spirits of ammonia or ammonium carbonate cubes orally and subcutaneous doses of strychnin were also employed when needed. Barium chlorid and tartar emetic in doses of 1 to 4 drams daily, in combination with Epsom salt or liquid petrolatum, were used to stimulate and unload the digestive tract.

Large doses of Epsom salt or barium were seldom given in cases where there was evidence of weakness or diarrhea or where the cow had been purged by the owner before we were called. Many cases that are bordering upon an enteritis will improve when given repeated doses of liquid petrolatum, pine oil, capsicum, and much stimulation. And if there is inability to stand, the udder is inflated, as a further means of stimulation.

Trocarization was required in over 5 per cent of the cases and in some, where the tympany persisted, we inserted pine oil, or dilute creolin solution through the canula directly into the mass of food in the rumen. No further surgical interference was needed in these cases, but in previous years a few have required rumenotomy.

Gastro-Enteritis; Enteritis

By gastro-enteritis we mean those cases of inflammation of the stomach (particularly abomasum) or intestines with severe hemorrhage or necrosis of the mucous membranes. These lesions are what we aim to prevent in the treatment of primary indigestion.

Occurrence: Enteritis was seen as often as intestinal catarrh, but was often secondary to some other fatal disease. It was frequently impossible to decide whether the enteritis was secondary or primary. Last year the seasonal occurrence of this condition was not instructive, as one or two cases occurred each month except August.

Etiology The cause in a quarter of the cases was unknown and was indefinite in many others. It was evident that infection played an important part in causing enteritis. Cows showed gastro-enteritis last year as a symptom of septicemia due to the following organisms: *Actinomyces necrophorus, Bact. bovisepticus, B. pyocyaneus, B. nephriditis bovis* and the the infections of septic metritis. It was seen also as a symptom of septicemia from traumatis splenitis.

Irritants are said to be an important cause of gastro-enteritis and one case was definitely due to the use of too much Epsom salt in a yearling heifer that was treated for indigestion by the owner. In other years we have seen it following ingestion of arsenate of lead and other irritants.

Food apparently caused it in a few cases last year. Too much milk and a diet of sour skim-milk proved fatal to two calves. It has often followed severe indigestions in previous years, but no cases last year could be assigned to this cause.

Symptoms and diagnosis: It is not difficult to determine that enteritis is present by observing the well-known symptoms, but it is difficult to determine what *other* conditions are present. The majority of cases show depression, normal or subnormal temperature, a fast weak pulse, sunken eyes, anemia of the visible mucous membranes, with marked weakness, staggering or inability to stand. The digestive tract is paralyzed and very

little is heard on auscultation of any part of it. Slight soreness over the abomasum or intestines is sometimes present. The feces are watery or mixed with much mucus and blood and passed involuntarily, or often there are no feces passed.

Often in infectious diseases such as hemorrhagic septicemia or necrobacillosis the temperature is high, but the other symptoms are similar to those seen in severe enteritis. The diagnosis is therefore not always possible in the living animal, since she may show principally enteritis, and die from a septicemia due to various causes. Half of our cases which showed marked gastro-enteritis were suffering from some disease of much more importance to the rest of the herd. The only way to clear up the diagnosis in these cases where a diseased kidney, necrobacillosis, hemorrhagic septicemia, septic metritis or mastitis, or traumatic gastritis is the principal cause of the disorder, is by examining all the systems instead of the digestive system alone. But frequently even an autopsy and laboratory examination of tissues leave one in doubt as to the primary cause of the disorder that terminated in gastro-enteritis.

Treatment: Obviously treatment is difficult when it is impossible to reach an accurate diagnosis. We try to treat the underlying cause if that appears to be metritis or mastitis or hemorrhagic septicemia. If the gastro-enteritis is a sequel to indigestion we rely on protectants such as liquid petrolatum, bismuth subnitrate and tannin, and use stimulants. In young animals anti-hemorrhagic septicemia serum was used in some cases where the diagnosis was uncertain. Of the sixteen cases diagnosed as gastro-enteritis, five recovered. Two of these were given great quantities of oat-meal gruel, eggs and milk in addition to stimulants, protectants and astringents. Of the eleven cases that died, seven showed serious complications.

Traumatic Gastritis

Traumatic gastritis was the diagnosis when it was suspected that there was a perforation of the entire wall of the reticulum by a foreign body with resultant adhesions. In this discussion it is admitted all cases classed as traumatic gastritis may not have been suffering principally from that condition, and therefore the cases that received the diagnosis of traumatic gastritis have been placed in one of the four following groups:

First, there were four cases diagnosed rather positively as traumatic gastritis in which *no foreign body was present.* All four showed many of the usual symptoms of traumatic gastritis

but each was autopsied. Two which had shown symptoms of parturient paresis early in the course of their illness finally died of septic metritis, although traumatic gastritis had been strongly suspected.

A third died of pneumonia after showing subcutaneous emphysema for several days following an accident. A fourth was killed because of emaciation and weakness after several weeks' sickness. She had shown a high pulse and soreness over the reticulum, but autopsy showed a mitral thrombosis. This group which we know was incorrectly diagnosed constitutes less than 10 per cent of traumatic gastritis cases.

The *second* group includes those fatal cases where there was *another condition* present that may or may not have been *secondary to the traumatic gastritis.* In this group an autopsy is essential because it often excuses the veterinarian for losing the case of metritis or indigestion when a nail or wire that has done more or less damage is found. Nine, or 20 per cent, of the cases of traumatic gastritis had important complications as follows: metritis with uterine rupture; metritis with abscesses in the kidney and peritonitis; septic metritis (4 cases); hepatitis and rupture of the rumen and acute indigestion with tympany in one that was found dead. These six cases with fatal metritis suggest that an infection may enter the blood from a traumatic gastritis and localize in the uterus, and this has apparently occurred each year in many of the fatal metritis cases.

In the *third* group are those that show rather typical symptoms of traumatic gastritis, but the exact nature of the disease is left to speculation, since recovery occurs. Fourteen cases, or 32 per cent of the cases diagnosed as traumatic gastritis, have remained alive for several months although two are developing arthritis at the present time and others may have trouble at any time, especially at later parturitions.

In this group also there were two cases of metritis, one case of mastitis and two cows with both conditions. One of these cows suffered from a severe metritis after retained placenta, but recovered and milked well. Suddenly she developed a persistent mastitis in all four quarters and was then killed as beef. She was very fat but postmortem inspection showed an abscess from a foreign body. It was located anterior to the reticulum and contained a liter of fetid pus.

In the *last* group are typical cases of traumatic peritonitis or pericarditis. Frequently there is in these a history of slow move-

ments while with the herd, repeated attacks of indigestion that are slow to recover when treated, and gradual emaciation. The pulse is usually above 80, but the temperature is variable, often being high, in abscess of the spleen, or pneumonia. There is usually marked soreness on percussion over the heart or xiphoid cartilage. Subcutaneous edema ventral to the neck is often seen if pericarditis exists. Edema was noted in the three cases showing pericarditis on autopsy. A muffled heart-sound or an abnormal splash may be noted by auscultation of the heart.

This group included sixteen cases, or 38 per cent of those called traumatic gastritis, and all except one were fatal. The case that recovered developed symptoms of indigestion with a swelling posterior to the left elbow on the thoracic wall.

A few weeks later a darning-needle was removed from this abscess. Another case was operated through the rumen and the foreign bodies removed, but a large abscess in the spleen with peritonitis and general sepsis made this case hopeless. Perhaps a few others could have been improved by an operation. The operations described by Dr. J. N. Frost give cases in this last group their only chance for recovery.

A recent paper and demonstration by Dr. J. K. Bosshart[1] further substantiates the belief that we might have saved a few carefully selected cases by a laparotomy and rumenotomy. He reported that twenty-five cases that were seriously ill were operated through the left flank, the adhesion located between the reticulum and other tissues, and the foreign body removed through the rumen or it was removed from the peritoneal cavity. Nineteen cases, or 76 per cent, recovered. It may be possible that a large percentage of these cases would have recovered without an operation, since 38 per cent of those which we diagnosed as traumatic gastritis recovered. But the percentage of recoveries in those operated by Dr. Bosshart is mugh higher and he was able to make a positive diagnosis and to remove the foreign body. Our greatest difficulty lies in knowing when to operate. The patient shows so little that we feel that it is doubtful if a foreign body is doing much harm, or the case is so severe that an operation would be fatal. In selected cases these operations deserve a trial.

Displacements

It is a well-known fact that displacements involving the digestive tract, with the exception of intussusception, are rare in cattle. None occurred during the last year, but the following

FIG. 1. Torsion of stomach—Calf.

brief case reports describe a few of the displacements seen in cattle during the last four years.

Case 1: A yearling grade Holstein heifer developed colic and was not examined until three days later. At that time there was marked depression and symptoms of septicemia, with a subnormal temperature and no perceptible pulse. Heart-rate was 88. Rumen was bloated slightly, and the digestive tract completely paralyzed. On autopsy 24 hours later an *incarceration of 18 inches of the small intestines* was found. This was incarcerated by an old peritoneal adhesion of unknown origin.

Case 2: A 4-year-old grade Holstein cow showed anorexia and stepped about with rear legs for a few hours. She passed a scant amount of feces for 36 hours and became depressed. On examination there was little noted except that there was little action over the digestive tract. A rectal examination showed a hard mass of intestines that had undergone *intussusception.* The involved portion was removed the same day and the cow has been used as a milk-producer for two years since that time.

Case 3: A month-old pure-bred Guernsey heifer was given a change of diet and in a few days developed anorexia and marked depression. Temperature, 100° F.; pulse, 105; with the patient recumbent and weak. The rectum was dilated and only serum and mucus were passed. The calf died three days later, and autopsy showed *torsion of the abomasum,* involving the reticulum and omasum somewhat, at the place of the twist. The duodenum was occluded as shown in figure 1. This condition is mentioned by Hutyra and Marek.[5]

Summary

1. According to our data very few cows die of primary indigestion.

2. There are at least twelve different complications, including infectious diseases, and some of these conditions may be differentiated from indigestion only by following the cases to autopsy.

3. Digestive disorders in cattle, especially traumatic gastritis, offer an interesting field for the application of surgical methods of diagnosis and treatment.

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[1]Hutyra & Marek: Pathology and Therapeutics of the Diseases of Domestic Animals (5th ed.: 1926), II, p. 172.
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[3]Frost, J. N.: Laparatomy in the cow. Jour. A. V. M. A., lxviii (1926), n. s. 21 (4), p. 412.
[4]Bosshart, J. K.: The early diagnosis and treatment of traumatic gastritis (peritonitis) in cattle. Corn. Vet., xvi (1926), 4, p. 257.
[5]Hutyra & Marek: Idem, p. 161.

OPERATIONS UPON THE UDDER AND TEATS*

By C. H. CASE, *Akron, Ohio*

In considering the subject of operations upon the udder and teats, it should be stated that we do not have anything new to present, but will try to give an outline of the operations we perform in our practice.

Starting with operations on the teats, the one performed most often in our practice is for stricture of the sphincter muscle. It is caused by injury, and that injury by the cow herself, in 95 per cent of the cases. The other 5 per cent are due to injuries inflicted by other cattle or resulting from accidents. These percentages were learned through watching a large herd, where a cow was allowed the freedom of a box-stall and where it was impossible for another cow to injure the teats.

The condition is known as "spider" by many dairymen and in the majority of cases occurs only in cows in heavy flow of milk. If you will stop and watch a cow start to get up, especially one with a large udder well-filled with milk, see her draw her feet up in preparation to standing up, you will hold your breath and wonder why she has any teats that are not injured.

The term "spider" comes from the peculiar shape of the injury, for where the end of the teat is crushed the skin is broken in several directions, with a resulting scab. The end of the teat is swollen slightly and the duct inside feels hard, and the regular flow of milk is occluded. The dairyman can not get any milk or possibly only a very small quantity after many minutes of hard labor. Several have remarked that it made them sweat even in the winter time.

With many dairymen a milking-tube is resorted to, with the result that many times a severe case of garget follows, with the loss of a quarter. It is our belief that if the ordinary milking-tube was never manufactured, the dairymen would not have so many three-quartered cows, and would be many thousand dollars ahead every year.

HISTORY

This is the usual history obtained by the practitioner from the dairymen: "I boil the tube every time I use it, to make it sterile. I can not understand why this cow developed garget." When asked if he cleaned and disinfected the end of the teat

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before inserting the tube he invariably replies "No." A sterile milking-tube pushed up through dirt into the milk-well equals garget. We have tried to instruct our dairymen never to use a milking-tube and to call us for the following operation:

Operation

We carry in our machine a 20-foot cotton rope, in one end of which a loop has been made. The loop is put around the leg of the cow on the side of the stricture in the teat and the foot is pulled back off the floor and held by an assistant. It is never tied, so that if the cow should fall she can be released at once. A nose-leader is applied.

The end of the teat is cleaned with peroxid to remove dirt and painted with iodin solution. This is done before the foot is retracted. Before operating we again touch up the end of the teat with iodin. A dilator, which has been previously sterilized and wrapped in sterile cotton, is inserted to enlarge the opening. Grasp the teat close to the udder, which must be filled with milk. Insert the Green bistoury and cut the sphincter muscle from above downward and part way through, until you can feel a relaxation of the sphincter. Cut in opposite directions. Try milking and if you have a full stream of milk, stop cutting. Never operate unless the teat and well are full of milk.

The follow-up is just as important as the operation. Instruct the owner to milk out the milk and blood clot within one-half hour and then about every two hours, for several times. Within a few days everything will be normal. If you have not cut enough, instruct the owner to let you know and re-operate. If the blood clot is allowed to remain for several hours you will have to make a return call and break down the blood clot before the milk can be started.

If you cut entirely through the sphincter it will grow back together and you will have, after a week or more, a stricture worse than before you started to operate. On rare occasions, in case of a very severe injury, where you have had to cut the sphincter too much, you may have a leaker follow, but most owners prefer that to the complete loss of a quarter. Injections of Lugol's solution with a fine needle into the sphincter will sometimes remedy this condition.

We apply to the end of the teat, after the operation and after each milking, an antiseptic such as mentholatum or pine-oil disinfectant. I know of no other operation that we perform

that pleases the dairyman more by allowing him to draw the milk easily and save a quarter of a valuable cow, for it means many dollars to him. I believe that this operation has and is bringing us in more dollars than all the other operations that we perform. The same operation performed on hard-milking cows will make them the easiest milkers in the stable and we are called upon to do this operation many times each month. In fact, we have a few clients who make a practice of buying hard-milkers at a low price and having them operated upon, thus adding much to their profits. I know also of one pure-bred cow that was sold at a sale for several hundred dollars, that the owner had to grit his teeth to milk before this operation was performed and the purchaser said she was the finest milker he had in his barn.

The next operation in point of numbers, is where the mucous membrane lining the duct is swollen part way between the end and the base of the teat, causing a partial or complete occlusion of the duct when milking is attempted. This condition is many times caused by rough milking or other injuries. The method of operation is to insert the bistoury, grasping the tumor-like swelling firmly between the thumb and first finger, and cut it into several pieces. This has produced excellent results for us.

The growth of a membranous partition that completely or partially occludes the passage of milk at the base of the teat is the most serious of all the operations. This condition occurs when the cow is dry, and upon freshening only a small amount of milk will come down at a time and in many cases none at all. The cause of this condition I have never been able to explain, as it has occurred in heifers as well as in aged cows, and we have one cow that we have operated upon every year, upon freshening, for four years and many others at two and three years freshening.

Our method has been to puncture the membranous partition and with the bistoury cut the partition in all four ways until we can feel the edge of the knife against the skin. We are of the opinion that the failures in the past were due to not cutting enough and the membrane grew back within a short time. After doing this operation, considerable milk should be left in the quarter for several days, milking out only a small amount, five or six times a day. By allowing the teat and well to be filled with milk, the cut parts are held apart and there is much less danger of the parts closing again.

Barb-wire Cuts and Injuries

Barb-wire cuts and other injuries to the teats, especially those that open the milk ducts, call for prompt action. If taken care of properly, it will save the client many dollars and much trouble. We sew the opening together with interrupted sutures, placing them quite closely together, after cleaning and disinfecting the surface with iodin solution. A sterile milking-tube equipped with a cap is inserted in the duct. A thread four or five inches long is attached to the milking-tube. A small piece of cotton covered with powdered sterilac is placed against the wound. An adhesive tape is applied, between the layers of which the thread from the milking-tube is held in position. The moisture from the wound liberates the chlorin in the sterilac, producing a continual antiseptic condition. The cap from the milking-tube should be removed every two or three hours, to allow the milk to escape, and as soon as the flow stops the cap is replaced to avoid infection getting into the milk-well. We allow the tube to remain in place ten days if possible, when it can be removed and the cow milked normally. We can show you many cows thus treated that you can not tell today where the injury occurred. One cow that milked, on her best day, 119.9 pounds of milk, had a cut over one inch long in the milk duct, was sutured at 10 p.m. with the aid of automobile lights, treated in the above manner and today you can not tell which teat was injured.

Operations upon the Udder

In our practice we have never had occasion to perform the operations upon the udder that we read about in the text-books. We have preferred to wait, in the removal of quarters, until infection has loosened up the quarter very much before removal. The opening and draining of the abscesses that form following garget and other injuries constitute the major part of our operations upon the udder.

GERMAN VETERINARIAN STUDYING HERE

Dr. Melch Westhues, of the Veterinary High School, University of Giessen, Giessen, Germany, has been spending a few months at the New York State Veterinary College, Cornell University. He left Ithaca, March 10, for New York, where he will spend some time in study at an X-ray institute. He plans to remain in America until October. Dr. Westhues is on a fellowship from the International Education Board.

STUDIES ON ABORTION IN MARES

I. The Diagnosis and Differential Diagnosis of Contagious Abortion*

By W. W. Dimock *and* E. S. Good

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In discussing the diagnosis and differential diagnosis of abortion in mares, it is taken for granted that those who have had even a limited experience in dealing with abortion in the equine species recognize that there are a number of different factors that may, through their action and influence upon the pregnant mare, and more particularly in the genital system, result in abortion or premature expulsion of the fetus. Therefore, as a tentative working basis, we offer the following classification of abortion in mares on the basis of the different factors that may be operative:

1. Abortion (contagious) due to the presence and action of the *Bacillus abortivo-equinus* (*Salmonella abortivo-equinus*), or contagious abortion of mares.

2. Abortion due to infection of the genital tract of the mare and of the fetus by *Streptococcus genitalium*.

3. Abortion due to infection of the genital tract of the mare and the fetus by one or more of a number of different micro-organisms that may have accidentally gained entrance to the genital tract of the mare before or at the time of service.

4. Abortion due to accidental injury, fright, strain, exposure, etc.

5. Abortion due to the feed and nutritional disturbances.

6. Abortion due to a general debilitated condition of the mare or organic weakness of the uterus and genital tract.

After having observed and studied cases of abortion in mares over a period of twenty years, including bands of brood mares kept on a number of different farms and in bands of brood mares maintained on the same farm year after year, we feel justified in asserting that in cases of abortion in mares it is possible to determine in the very great majority of cases what the cause was, both in the case of mares as a group and in the case of each individual.

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In the application of methods at our command for the diagnosis and differential diagnosis of diseases in general, we most often proceed by first carrying out an examination for the disease that in one or more respects has some outstanding characteristic and easily recognizable feature and for the determination of which we have reliable bacteriological and serological tests. In the case of abortion in mares it is quite natural that we should look first for evidence of contagious abortion, since we have definite means of recognizing cases of abortion due to the *Bacillus abortivo-equinus*. A further and most important reason for considering contagious abortion first is the very great danger that the infection may spread to other mares on the farm, unless active and effective preventive measures are taken.

Abortion Due to Bacillus Abortivo-Equinus

The microorganism may be isolated from the fetus, from the fetal membranes and from the uterine discharge of the mare. In addition to this the blood (mare) will (usually) give a decided positive reaction to the agglutination and complement-fixation tests. In case the examination was positive to the abortion organism, we would not consider as causative factors of importance, for the particular case, other microorganisms that might be recovered from the fetus, afterbirth or genital tract of the mare. In case the examination was negative to contagious abortion, then other causes would be considered.

Abortion Due to Streptococcus Genitalium

All tests for contagious abortion are negative. *Streptococcus genitalium* is isolated from the fetus, afterbirth, and from the uterine discharge of the mare; cervicitis and metritis usually are evident. In case the streptococcus is not found in the fetus, nor in the circulation of the fetal membrane, but is found in the uterine discharge, it should be remembered that this microorganism is frequently found in the uterine discharge of mares that have foaled normally. Therefore, if the mare recovered promptly and showed no other evidence of inflammation of the genital tract, it could not be stated definitely that the streptococcus was the cause of abortion. On the other hand, if the mare did not recover, but continued to show evidence of cervicitis and metritis, and streptococci could be found in the uterine exudate, it would seem reasonable to assume that abortion had resulted from the fact that the mare was suffering from metritis

due to streptococcic infection, but for some reason the microorganism had not invaded the fetal circulation. It may have been present and yet not have been recovered by the methods used. The history of the mare and her future breeding record would be important factors in the final analysis.

Abortions Due to Numerous Causes

The third class includes abortions due to a miscellaneous group of microorganisms that may have accidentally gained entrance to the genital tract. There is, of course, great difficulty in determining, in every instance, the exact significance of the microorganisms found. We have isolated from the genital tracts of barren mares, suffering from metritis, a variety of microorganisms many of which have also been recovered from the fetus and afterbirth in cases of abortion. It is not unreasonable to assume that many mares so affected may conceive and later suffer from abortion, due to the action of one or more of these microorganisms and the pathological changes that have resulted from their presence in the uterus.

Abortion Due to Injuries

Abortion due to accidental injury of a physical or mechanical nature is possible, beyond doubt. However, in the past, cases of abortion altogether too often have been attributed to accident. Under no circumstances should a diagnosis of accidental abortion be accepted until after the case has been thoroughly studied, all possible infectious and toxic causes eliminated, and the evidence of an accident substantiated.

Nutritional Disturbances

A diagnosis of abortion due to the feed and nutritional disturbances is acknowledged to be difficult and, without extended observations and careful tests, is impossible of specific confirmation. The diagnosis is reached by a process of elimination of other possible causes and from a compilation of all available evidence. All tests for the presence of infection are negative. Pathological lesions in the fetus and afterbirth are absent, and the genital tract of the mare returns to normal, in the very great majority of cases leaving no bad effects. There is no history of an accident. Several mares in the stud abort, all of which are being fed and handled in the same manner. If the mares that have aborted come in contact with healthy, pregnant mares in other groups, abortion does not result. Abortion in the remain-

ing pregnant mares of the aborting group is checked upon a change of feed and environment. Usually there is reliable evidence that the feed being used is of decidedly inferior quality, or decidedly lacking in both variety and quality.

Other Non-specific Causes

Abortions due to general debility, atony of the genital tract and non-infectious pathological changes in the uterus, both functional and structural, apparently are not numerous, yet there are cases where such a diagnosis seems justified. The diagnosis would be based on the fact that all examinations and tests were negative as to infection. The possibility of injury, feed, or nutritional disturbance would be eliminated just as far as possible by a study of the case. Further confirming evidence would be that other mares in the stud did not abort, and that upon an examination, the genital organs of the mare were found to be in a generally weakened condition.

Pathology of Abortion

Abortion in mares, on the basis of actual study, in the very great majority of cases is undoubtedly the result of infection. The pathological changes are, to a certain extent, indicative of the type of infection that was responsible for the abortion. The pathological changes found associated with contagious abortion are quite constant and in many respects characteristic. They are those representative of an acute condition; congestion, inflammation, hemorrhage and exudation predominate over the more strictly degenerative processes. The exudate found adhering to the fetal and maternal placentae is a thick muco-cellular mass of a dark-red or brownish color, and in quantity, character and color is of diagnostic value. The mare, barring complications, recovers promptly, without treatment.

In cases of abortion due to *Streptococcus genitalium* and other types of infecting microorganisms of a less specific nature, the pathology stands out in rather marked contrast to that of contagious abortion. The degenerative changes predominate over the processes of inflammation and hemorrhage: abortion not having taken place from the immediate action of the infection, but only after the infection has caused the development of gross degenerative changes. The mare usually will continue to show evidence of metritis for a longer time and does not as a rule recover without treatment.

In case of abortion due to accident or toxic effects from the feed, there is an absence of pathological lesions indicative of infection.

In those cases where material is available and in condition for examination, much valuable information may be gained from a close inspection of the fetus, afterbirth and genital tract of the mare. To ignore the pathology in cases of abortion would be gross negligence. To attempt to make a diagnosis as to the cause of abortion on the gross pathology alone would be to invite confusion. A careful study of the lesions in cases of abortion is to us important, not as a direct means of making a diagnosis but indirectly, by indicating the line of attack most likely to determine the cause.

In many cases the pathological pictures overlap, presenting features found in more than one type of infection. That we will later be able to tell from the lesions the type of infection present, with a greater degree of accuracy than at present, is to be expected, unless we deny the possibility of progress. That the diagnosis and prognosis in cases of abortion will be made wholly on a study of gross pathology is not only doubtful but not consistent with everyday procedure followed in the case of most other diseases with which we have to deal.

From our studies and observations of abortion in mares and of infections of the genital tract, it is evident that more than one factor capable of producing abortion may be present in an individual case. For example, *Streptococcus genitalium* may be isolated in conjunction with *Bacillus abortivo-equinus*. In cases of abortion due to streptococcic infection you will occasionally encounter micrococci and various types of bacilli. Instances where more than one type of microorganism may be isolated from the fetus in cases of abortion are not many, and when the cases are studied in detail the importance of one infecting agent over that of another is not impossible of determination. Many foals carried full term are found to be diseased at birth and many foals so diseased die; in such cases the dam often is found to be suffering with metritis. Had such a mare been exposed to a severe injury, great excitement, or extreme exposure during the gestation period, the possibility of abortion would have been greater than in the case of an absolutely healthy mare subjected to the same degree of injury.

It is realized that any attempt to classify each individual case of abortion in mares on the basis of an exact cause is open to

error. Abortion in mares can be classified under a group heading with a very high degree of accuracy. Failure to classify a particular case is the result of an inability to demonstrate the cause rather than that an exact cause was not present. The grouping that we have used is based on specific instances, each case being studied and analyzed to the fullest detail. Work carried on at the Kentucky Experiment Station on abortion in mares, including both field and laboratory observations, leaves no doubt in our minds as to the specificity of so-called contagious abortion in mares. Abortion due to other causes, while often more difficult of exact determination, is nevertheless substantiated by the studies which we have made. The reliable and trustworthy diagnostician makes use of every possible source of evidence, demanding that the clinical symptoms and pathological lesions be substantiated by definite laboratory findings and specific tests in every case for which we have developed such a procedure.

A study of diseases of foals has disclosed some striking analogies with disease of the genital organs and abortion. For example, joint-ill, due to *Bacillus abortivo-equinus*, to *Streptococcus genitalium* or to *B. viscosum equi*, is practically indistinguishable clinically. On the other hand, the pathology found upon postmortem examination offers some striking contrasts; enough so to be of diagnostic value. Yet to predict that the final decision as to the true etiological factor need not be confirmed by bacteriological study would be assuming too much for the accuracy of the eye and the reliability of the interpretative power of the operator.

In closing, mention should be made of the *Bacterium viscosum equi*. This microorganism is mentioned in European literature as having been isolated from the genital tracts of mares and as a cause of abortion. However, its importance seems to be as a cause of joint-ill and septicemia. We have never observed a case of abortion due to this organism, nor have we isolated the bacillus from the genital tracts of mares. We have, however, isolated the *Bacillus viscosum equi* from foals suffering with joint-ill and septicemia in fourteen instances. The foals from which isolations were made had all been carried full term but died early in life, none of them exceeding one week of age.

STUDIES ON ABORTION IN MARES

II. The Results of Vaccination Against Contagious Abortion in Mares*

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After the etiology of an infectious disease is well established, the next effort of the investigator is to find a cure or a prophylaxis for the malady. With some diseases the infecting agent is of such a nature as to offer but little encouragement in the way of developing a prevention or a cure.

The germ which causes large outbreaks of infectious abortion with mares falls in a group of organisms (subgroup 2 of the colon-typhoid group), which offers large possibilities in the way of producing immunity by the easiest known route, namely, the bacterin route. This proved to be true in our investigations in the immunization of mares and jennets against infectious abortion, the etiological factor of whch is the *B. abortivo-equinus* (*Salmonella abortivo-equinus*). Very small amounts of this organism are fatal to rabbits and we soon found that this animal could be protected against many times the lethal dose of the germ by previously immunizing it with a bacterin made from *B. abortivo-equinus* and could be protected against a lethal dose of infection by the use of a hyperimmune horse serum. The bacterin led to so much encouragement in the immunization of small animals that we at once directed our attention to the immunization of mares by its use and we may say that the results exceeded our most sanguine expectations.

Our first experimental work in the immunization of mares was to determine the possible harm to the animal by subcutaneous and intravenous injections of different amounts of the bacterin at regular and irregular intervals. We were especially anxious to determine if anaphylactic reactions might occur. We found that considerable leeway could be allowed in the use of the bacterin without harm to the mare other than some stiffening of the muscles of the neck for a day or two after the second and third or fourth injections. We also found by blood tests,

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using the agglutination test as an indicator, that a high titer of antibodies could be built up by the use of a bacterin and a much higher one by the use of a bacterin first, followed by the injection of the live organism, the method we employ in producing a hyperimmune serum. The use of the bacterin has been so efficient, however, in immunizing mares against infectious abortion due to the *B. abortivo-equinus*, that we soon employed this method exclusively in field work.

In 1916 the bacterin was used on 22 mares in one herd; in 1917, 37 mares were treated in two herds; in 1918, 45 mares in three herds; in 1919, 294 mares in 11 herds; in 1920, 808 mares in 21 herds; in 1921, 510 mares in 18 herds; in 1922, 648 mares in 26 herds; in 1923, 1213 mares in 27 herds; in 1924, 1763 mares in 49 herds; and in 1925, 1455 mares in 40 herds. There have been few cases of abortion among the mares vaccinated, all of which have been studied by our laboratories and in only one instance was the *B. abortivo-equinus* isolated from the fetus or the placenta. In every other case of the comparatively few abortions among vaccinated mares, the etiological factors apparently were other than the *B. abortivo-equinus*.

We have been able to stop abortions in all the herds we have worked with, after a sufficient amount of time had elapsed to complete the immunizing process. Our first attempt at this was in 1916, with a herd of 28 mares, six of which had aborted before work was begun. We were not called on for aid until the sixth mare had aborted. The foal of this mare had been buried but we were able to isolate the *B. abortivo-equinus* from a swab of the vagina of the mare. The remainder of the mares of this herd were vaccinated by means of a bacterin and all but one delivered live foals. This one mare evidently was infected before the immunization was begun. In another instance we were called on to aid in arresting the disease which had gotten a firm foothold in a herd of mares, five of which had aborted. The *B. abortivo-equinus* was isolated from the afterbirth of the last of the five mares to abort. The mares which had not aborted were separated from the ones which had. After separation they were given the regular series of vaccinations. They were given three injections seven days apart. Seven days from the last injection the mares were returned to the field in which the aborters were running and all of the vaccinated mares delivered live foals.

In another instance we were called on to vaccinate a large

herd of mares after some 26 had aborted and the germ had been isolated from the placenta of one of the aborting mares. We were called on late to give aid. From the time of the first injection of the bacterin until the last injection, an interval of three weeks, a number of mares aborted. Eight days after the last injection of bacterin no more of the mares in this large herd aborted. The officers in charge of the breeding operations in the United States Army Remount Depot at Front Royal, Virginia, report that they have been able to prevent abortion in mares by the use of a bacterin made from the *B. abortivo-equinus.*

Time to Treat Mares

It must be remembered that the vaccination is a preventive and not a cure. The proper procedure with a herd of mares is to vaccinate them before the disease makes its appearance and this is the procedure with most of the breeders of Thoroughbred and Standardbred mares of this region. Our experience tends to show, however, that the immunization conferred on a mare is not of long duration—not longer than one breeding season. Measured by the agglutination test, mares vaccinated during the summer and fall did not carry so high a degree of immunity at foaling time as we had anticipated. In the spring of 1923, we made the agglutination test of 29 mares in six different bands, one of which had been immunized as early as the latter part of June and one herd as late as the first part of January. The other herds were vaccinated in intervening months. The blood for the test was taken from the mares in the spring, just before foaling time. The average agglutinating titer of these mares was 336, as compared with an average titer of 150 with the blood of nine mares which had not been vaccinated. Although the average of agglutination tests was perceptibly higher in the immunized than in unimmunized mares, the difference was not so great as we had thought. The agglutination test as an indicator would show, however, one hundred per cent more antibodies in the blood-serum of the treated than in the untreated mares.

Number of Inoculations

We have tried different numbers of injections of the bacterin in the immunization of mares. In some studs as few as two injections have been made and in some studs as many as four injections have been administered. In a few instances breeders would insist on vaccinating their mares with a series of three

injections in the spring, soon after foaling, and again toward the end of the year with another series of two injections. While this method insures a greater degree of protection to the mares, our experience would lead us to believe that the second series of vaccinations is not necessary. We are now recommending that the mares be vaccinated regularly in the early fall, giving three injections one week apart. The first injection consists of one cubic centimeter of what we call our standard bacterin, containing about 8,500,000,000 organisms per cc. The second injection is 2 cc of the same material and the third injection is 2 cc of a double strength bacterin, i. e., one containing 17,000,000,000 organisms per cc.

Method of Preparing Vaccine

Known virulent strains of the *B. abortivo-equinus* are streaked on agar slants contained in large test-tubes measuring one by eight inches. The entire agar slant is seeded from a dilution of the organism in saline solution. The composition of the medium is 2 per cent agar made with raw-beef broth, using about 1 pound of raw beef to the liter, with 0.5 per cent salt and 1 per cent peptone, and the medium titrated to a H-ion concentration of pH7.0. The medium is then tubed and sterilized. The slants are incubated for 24 hours at 37.5° Centigrade. Each slant is washed with 7 cc of physiological salt solution into a sterile bottle containing sterile beads. Bottles are filled one-half full and shaken thoroughly to break up clumps of bacteria. They are then heated at 72° C. for one hour in a water-bath, the water coming to the neck of the bottle. Five loopfuls of the bacterin are planted on an agar slant and incubated for 48 hours to determine its sterility. If no growth appears on the slant, the bacterin is filtered through four layers of cheese-cloth. An equal amount of saline solution is added and enough of 5 per cent phenol to make a one-half of one per cent solution. This makes the bacterin used for the third treatment, the dose of which is 2 cc. For the two other treatments it is diluted one-half with saline solution and the dose is two cc for the second treatment and 1 cc for the first treatment. The material is kept in the ice-chest until ready for use.

The mares are inoculated subcutaneously in the region of the neck and it is needless to say that syringe-needles should be sterile and the seat of inoculation swabbed with tincture of iodin.

THE OBSTETRICAL CLINIC AT THE DANISH ROYAL VETERINARY AND AGRICULTURAL COLLEGE, COPENHAGEN

By J. G. HORNING, *Houston, Texas*

It was my pleasure, while in Copenhagen during October, 1926, to have a splendid visit with Professor Folmer Nielsen, who is Professor of Obstetrics and has charge of the Ambulatory Clinic of the Danish Royal Veterinary and Agricultural College. His department for obstetrical work was so exceedingly well arranged, and the operating-rooms and table for cows were so interesting that I asked permission to write it up for the JOURNAL.

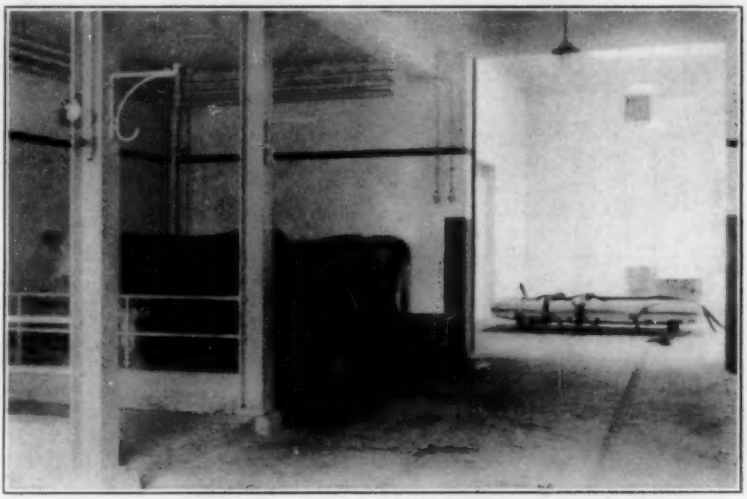

FIG. 1. Stable, showing door opening into preparation-room.

The building contains office, laboratories, dressing-room, locker-room, showers for the students, operating-rooms, box stalls, stanchions, etc. Everything is in tile and can be cleaned easily. The operating-room has sterilizers for large and small instruments and for the clothing of operators and assistants. There is a room for the preparation of the patient before it is placed in the operating-room. In fact the equipment and arrangement are as good as those found in the best type of medical hospitals. An idea of the stanchions, preparation-room and operating-room may be obtained from the accompanying photographs.

Figure 1 shows the stable with three small Jutland heifers highly pregnant. The door to the preparation-room is opened and the operating-table may be seen, with the special harness

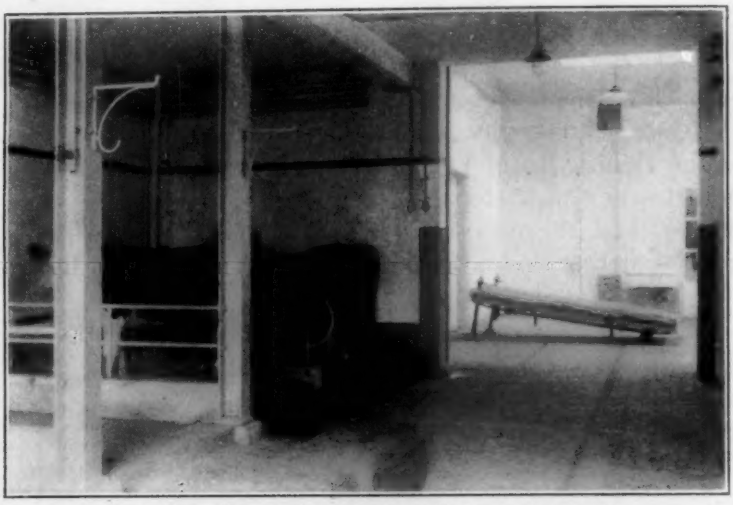

FIG. 2. Same view, showing operating-table in elevated position.

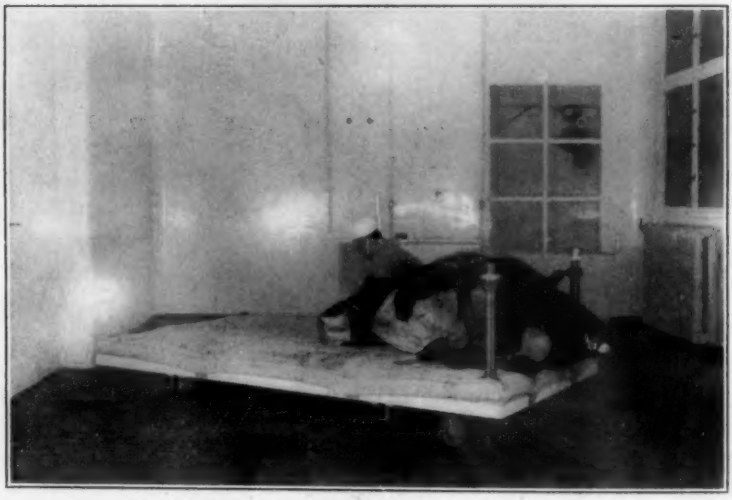

FIG. 3. One of the heifers cast and fixed on the table.

placed on the table ready for casting the animal and fixing it. The table shown was designed by Professor Nielsen.

Figure 2 shows the same, only the end of the table has been elevated to show the simple method of elevation and how much it may be elevated. However, it is usually not elevated when

standing in the preparation-room, as no operations are carried out here.

Figure 3 shows one of the heifers cast and fixed on the table.

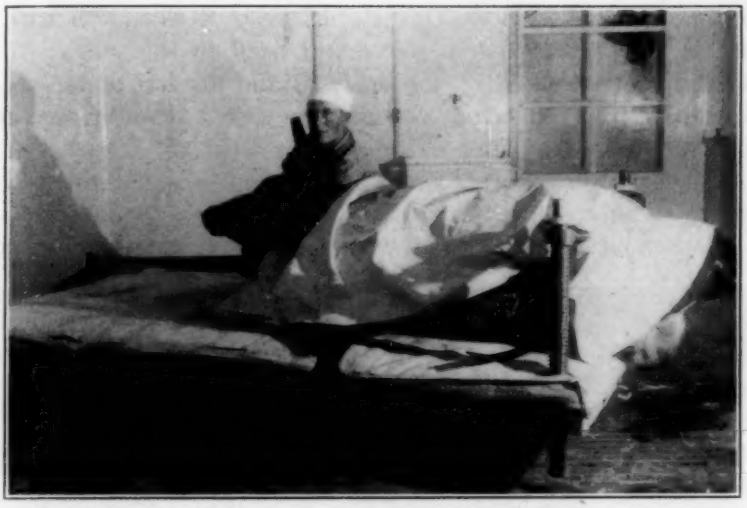

FIG. 4. Heifer in the act of calving, covered with sterile wax-cloth.

FIG. 5. Patient on table, covered with wax-cloth, the vulva being exposed to the operator.

The animal is calving, the hoofs of the calf just appearing at the vulva.

Figure 4 shows the calving heifer fixed on the table and

covered with a large piece of sterile wax-cloth. The table is ready to be placed in the operating-room.

Figure 5 shows the table standing in the operating-room with the hind end elevated and the posterior end of the narcotized patient covered with another sterile piece of wax-cloth with a rubber part perforated in the center fixed to the vulva. The style of clothing used by the operator and his assistants, which is always sterilized before use, may be seen, as well as one end of the large-instrument sterilizer.

Figure 6 shows another position in the delivery. All the heifers shown in figure 1 were delivered. In these small heifers, especially when bred too early, there is always a certain indication

FIG. 6. Another position of the heifer during delivery.

for more or less embryotomy. None of these heifers could have calved without assistance, nor could the calves have been delivered without great risk of injuring the heifers. On all the calves a complete embryotomy was made, i. e., both anterior legs were amputated, then the body-cavities were eviscerated, the anterior part of the body pulled out and cut off and the hind part divided with the chain-saw. All the operations were performed by the students, under aseptic conditions, the complete delivery lasting two to three hours. The afterbirth was delivered spontaneously in a few hours and the animals were all right. These heifers are purchased by the Clinic in order to be able to teach the students practical work, and the students are given as great a variety of work as is possible.

PARASITIC NODULES RESEMBLING TUBERCULOSIS IN THE LUNGS OF SWINE

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Nodules, caused by parasites in the lungs of swine, are of frequent occurrence and closely resemble the lesions of miliary tuberculosis. This resemblance is so great that often it is very difficult to distinguish between the two types of nodules, macroscopically. To be able to differentiate between these two types of lesions is of great importance to meat inspection, because the final disposition of the carcass depends upon which type of lesion is present.

HISTORY

It has long been known that palisade worms in the lungs cause nodules in certain species of animals. As early as 1875 Bugnion[1] divided verminous pneumonia in sheep, caused by *Synthetocaulus rufescens*, into three types, the third type of which he designated a nodular pneumonia. The nodules range in size from a millet-seed to that of a pea, and are either grayish yellow or a dark red in color, according to the acuteness of the inflammatory process. He states that this is the most common form, and that the nodules are the result of ova and embryos in the alveoli, which cause infiltration.

In 1883 Gratia[2] reported verminous pneumonia of swine in the form of a pseudo-tuberculosis, noting its analogy with lesions described above as due to *S. rufescens* in sheep; the nodules are essentially the product of an endalveolitis and endobronchitis in circumscribed foci.

Hutyra and Marek[3] state:

> In dogs affected with lung worms pinhead-sized, translucent, pearl-like, exceptionally large, broncho-pneumonic foci are formed at the root of the lungs; also in other places. They are produced by the ova or embryos of *Haemostrongylus vasorum*. In the presence of *Metastrongylus pussilus* the lungs of cats show a similar picture. The embolic transportation of embryos of *Ollulanus tricuspis* produces nodules similar to miliary tubercles

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with a hepatized pulmonary parenchyma in their neighborhood. These authors further state: "According to the observations of Osler, Blumberg and Rabe, *Strongylus canis bronchialis* produce in dogs wart-like nodules up to the size of a bean. They are arranged like mushrooms on the surface of the trachea and larger bronchi.

In 1907 Santicchi[4] notes that these verminous nodules in the lungs of swine are of special interest in their resemblance to true tuberculous nodules and that they occur in quite a number of host species. In his own studies Santicchi reports this condition of alveolar infiltration with leucocytes in the lungs of swine.

During the present year See-Lu-Hung[5] reported the examination of six lungs of swine in which he found numerous verminous nodules spread over the surface as well as in the interior of the lungs. These nodules were especially numerous in the posterior part of the lungs, and varied greatly in size; their color was deep red.

Facts Leading to This Investigation

Early in January, 1923, a portion of lung of a hog, showing a large number of nodules scattered over the pleural surface resembling miliary tuberculosis, was received by us from the meat inspection station of Madison, Wis., for diagnosis. The specimen record accompanying this specimen stated that the lymph-nodes appeared normal. Believing that we were dealing with a case of acute miliary tuberculosis of the lungs, examinations were made in the usual way for tubercle bacilli. A number of slides were examined for tubercle bacilli, with negative results. Cut and stained sections of portions of the lungs containing the nodules were then prepared and examined microscopically for histopathological changes of tuberculosis. No changes of this character were found, but it was noted that the nodules were composed of lymphocytes, which were arranged in small, grape-like clusters. The microscopic picture thus presented was suggestive of an alveolar lymphosarcoma. Owing to the fact that there were so many nodules in the lungs, and no evidence of a primary tumor elsewhere in the carcass, we were reluctant to believe that these nodules in the lungs could be metastatic tumors, regardless of their microscopic picture. These findings being unsatisfactory to us, we requested additional specimens for further study. About this time similar nodules in the lungs of swine were being found by inspectors in the federal meat inspection service in Chicago. We were thereby able to secure additional material for further investigation.

Early in the investigation it was noted that nodules simulating

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miliary tuberculosis were frequently found in the lungs of swine that had no changes suggestive of tuberculosis in the lymph-glands or the other organs of the body. Cut and stained sections were prepared from a large number of nodules found in the lungs of swine. In examining the stained sections of these nodules, one of us (Bengston) observed in several sections portions of a parasite, some of which contained eggs in which larvae were seen, indicating without question that some of the parasites within the nodules were mature.

Knowing that the eggs of lungworms in swine contain embryos before the eggs are finally deposited, we felt reasonably sure that the portion of parasite found in the nodule was one of the several species of swine lungworms.

In all cases in which the parasites were demonstrated in the lesions it was found that the nodules were composed principally of lymphocytes, which were arranged in distinct grape-like clusters.

Seeking a method whereby we would be able to see the parasite in its entirety, and thus identify it, we placed the nodules between two heavy glasses such as were used in the examination of pork for trichinae, and examined the nodule without staining. We were pleased to be able to see the parasite distinctly, with a magnification of from 40 to 60 diameters, but we were disappointed to find that the parasite was dead and so degenerated, in every case examined by us, that we were unable to identify it.

This method of examining the nodules led to a very important discovery, because it was found that the peculiar characteristic grape-like clusters of the lymphocytes, which were always seen in cut and stained sections of these nodules, could be distinctly seen in the unstained compressed preparations. This is of importance because it gives us a rapid and accurate method of differentiating between parasite nodules and tuberculous nodules in the lungs of swine. As before stated, nodules in the lungs of swine produced by parasites and by miliary tuberculosis, in most cases, can not be differentiated by the naked eye.

Gross Appearance of the Nodules

The nodules range in size from one to five millimeters in diameter; however, larger ones are frequently encountered; especially is this true where several nodules have coalesced.

The shape of the nodule is spherical, with a smooth surface when single; when several nodules have coalesced, the shape may be quite irregular.

They are greyish white in color, although some may have a slight pinkish hue, and are firm in consistency. We did not see any nodules which were of a deep-red color, as reported by See-Lu-Hung.

The nodules are more numerous in the posterior portion of the lungs, although they may be found in the anterior portion as well, when the nodules are numerous. They appear as glistening, grayish-white nodules just below the pleura.

The number of these nodules found in the lungs of swine varies considerably. In some cases only two or three nodules can be seen, while in other cases several hundred nodules may be found distributed over the surfaces of the lungs. The nodules are not all confined to the pleural surfaces of the lungs but, upon incision, are often found deep in the lung substance. The number of nodules found does not seem to bear any relation to the number of lungworms found in the terminal bronchi of the lungs, which are the habitat of the mature lungworms. Cases have been encountered in which a great many lungworms were seen in the bronchi without nodule formation in the lungs, while in other cases many nodules were present in the lungs and only a few parasites were found in the bronchi.

Nodule formation appeared to be more frequent in the lungs of swine that are less than one year of age. Sex and breed do not have any influence, and nodules are found in all seasons of the year.

Concerning the location and approximate number of parasitic nodules in the lungs of swine, as well as the percentage of swine affected with such nodules, one of us (Bengston) made an examination of the lungs of 11,429 swine at one of the slaughter-houses in Chicago operating under federal meat inspection, with the following results:

Of the 11,429 swine examined, 3,345, or 29.2 per cent, showed parasitic nodules in the lungs. These were divided into two classes: Those which contained less than twelve nodules and those which contained more than twelve nodules. In the first class, 2,492 cases were found. Of these, 2,413 lungs, or 72.1 per cent of the total number of lungs examined that contained parasitic nodules, we found that the nodules were confined to the posterior lobes of the lungs. In the remaining 79 cases of this first class, or 2.4 per cent of the total number of lungs containing parasitic nodules, the nodules were found to be evenly distributed over the surfaces of the anterior and posterior lobes of the lungs.

In the second class, or those containing more than twelve nodules, in 153 cases, or about 4.5 per cent of the number of lungs which contained parasitic nodules, the nodules were evenly distributed over the anterior and posterior surfaces of the lungs. In 682 cases, or about 21 per cent, the nodules were confined to the posterior lobes of the lungs. Data concerning the geographical location or the origin of the hogs containing parasitic nodules could not be obtained.

The diagnosis of parasitic nodules was based on the character of the nodules and the absence of tuberculosis in the lymph-nodes and elsewhere in the body, as it was found impracticable to make a microscopic examination of each individual nodule. The following compilation, though not making a positive differentiation between tuberculous nodules and those caused by parasites, may be of assistance:

COMPARISON OF NODULES CAUSED BY PARASITES AND THOSE CAUSED BY TUBERCULOSIS

NODULES CAUSED BY PARASITES	SMALL TUBERCULOUS NODULES THAT MAY BE CONFUSED WITH PARASITIC NODULES
Size	
From one to five mm. in diameter.	From one mm. to one cm. in diameter.
Shape	
Spherical, elevated above surface of lung with smooth margins and easily removed with forceps.	The smaller are spherical and raised above the surface. The larger are not so prominent. The structure is more or less conglomerate and the margins irregular and hard to remove even with forceps.
Color	
Grayish white and somewhat translucent.	Dull grayish white. In the larger ones tiny yellowish points are often seen which are more numerous along the border.
Consistency	
Quite firm but easily crushed. Some have a white or yellowish caseous speck in the center, which represents the dead worm. Never calcareous.	Quite fibrous and very hard to crush. Those 0.5 cm. or more in diameter very liable to contain calcareous points in or near the center.
Number	
Not likely to be more than 100 visible on the surface of the lung.	Usually many more nodules visible on the surface of the lungs.
Age	
Not frequent in hogs over one year old.	Found in all ages.

Species of Lungworms Associated with Nodules in the Lungs of Swine

At the present time three species, representing two genera, of lungworms in swine are recognized: *Metastrongylus elongatus*, *Metastrongylus salmi* and *Choerostrongylus pudendotectus*. To determine if one of these species of lungworms was more commonly associated with the parasitic nodules in the lungs than the others, one of us (Raffensperger) examined the bronchioles in the posterior lobes of 130 lungs of swine. These lungs were collected promiscuously on nine different dates, over a period of three and one-half months, at two of the large official establishments in Chicago where slaughtering is conducted.

The lungworms were located by cutting through the posterior portion of the lung and observations made for the presence of the parasites. The portions of lung cut off and showing parasites were taken to the laboratory and the worms dissected out and identified with the aid of a microscope.

The portions of lungs showing parasitic nodules were also carefully examined. The suspected nodule was pressed between two heavy glass slides and examined under the microscope for degenerated parasites. Three things were noted:

1. Which of the species of lungworms was most frequently found in the bronchi.
2. Whether the nodules were associated with both of the common species found in the bronchi.
3. How frequently a degenerated parasite was found in the suspected parasitic nodule.

Observations on the Presence of Parasites in Nodules of Lungs of Swine

Table I represents the number of lungs examined, the species observed in the bronchioles of the lungs and the frequency of the occurrence of associated parasitic nodules:

There were 130 specimens of lungs examined, of which 124 specimens showed lungworm infestation in the bronchioles. Six specimens showed nodules with a degenerated parasite, with no adults found in the bronchioles.

Of the 130 specimens examined, 96 showed only *Metastrongylus elongatus* in the bronchioles, and 28 showed *Metastrongylus elongatus* with *Choerostrongylus pudendotectus*. *Choerostrongylus pudendotectus* was always found associated with *Metastrongylus elongatus* and never observed as the only species present. *Metastrongylus salmi* was not observed in any of the specimens examined.

TABLE I—*Data on examination of lungs of swine for parasitic nodules*

DATE 1926	NUMBER OF LUNGS EXAMINED FOR LUNGWORMS	NUMBER OF LUNGS IN WHICH *Metastrongylus elongatus* WAS OBSERVED ALONE IN THE BRONCHIOLES	NUMBER OF LUNGS IN WHICH BOTH *Metastrongylus elongatus* AND *Choerostrongylus pudendotectus* WERE OBSERVED	NUMBER OF LUNGS SHOWING NODULES WITH DEGENERATED PARASITE AND ONLY *Metastrongylus elongatus* PRESENT	NUMBER OF LUNGS SHOWING NODULES WITH A DEGENERATED PARASITE WITH BOTH SPECIES PRESENT	NUMBER OF LUNGS WITH NODULES FREE FROM DEGENERATED PARASITE BUT SHOWING *Metastrongylus elongatus* IN BRONCHIOLES	NUMBER OF LUNGS WITH NODULES FREE FROM DEGENERATED PARASITE BUT SHOWING BOTH SPECIES IN BRONCHIOLES	NUMBER OF LUNGS FREE FROM NODULES BUT SHOWING *Metastrongylus elongatus* IN THE BRONCHIOLES	NUMBER OF LUNGS FREE FROM NODULES BUT SHOWING BOTH SPECIES IN BRONCHIOLES	NODULES IN LUNG SHOWING A DEGENERATED PARASITE BUT NO PARASITES IN THE BRONCHIOLES
Jan. 15	10	10	0	4	0	0	0	6	0	0
Jan. 21	6	6	0	1	0	0	0	1	0	0
Jan. 28	21	17	3	1	0	4	0	9	3	1
Jan. 29	15	10	4	1	1	7	0	7	1	1
Feb. 10	30	25	4	8	2	2	2	4	2	1
Feb. 19	12	7	4	2	0	13	2	2	5	0
Mar. 19	13	5	8	0	2	3	2	3	0	2
Apr. 27	8	5	1	0	0	3	1	2	3	0
May 4	15	11	4	1	0	4	0	7	0	0
TOTALS	130	96	28	18	5	38	8	41	14	6

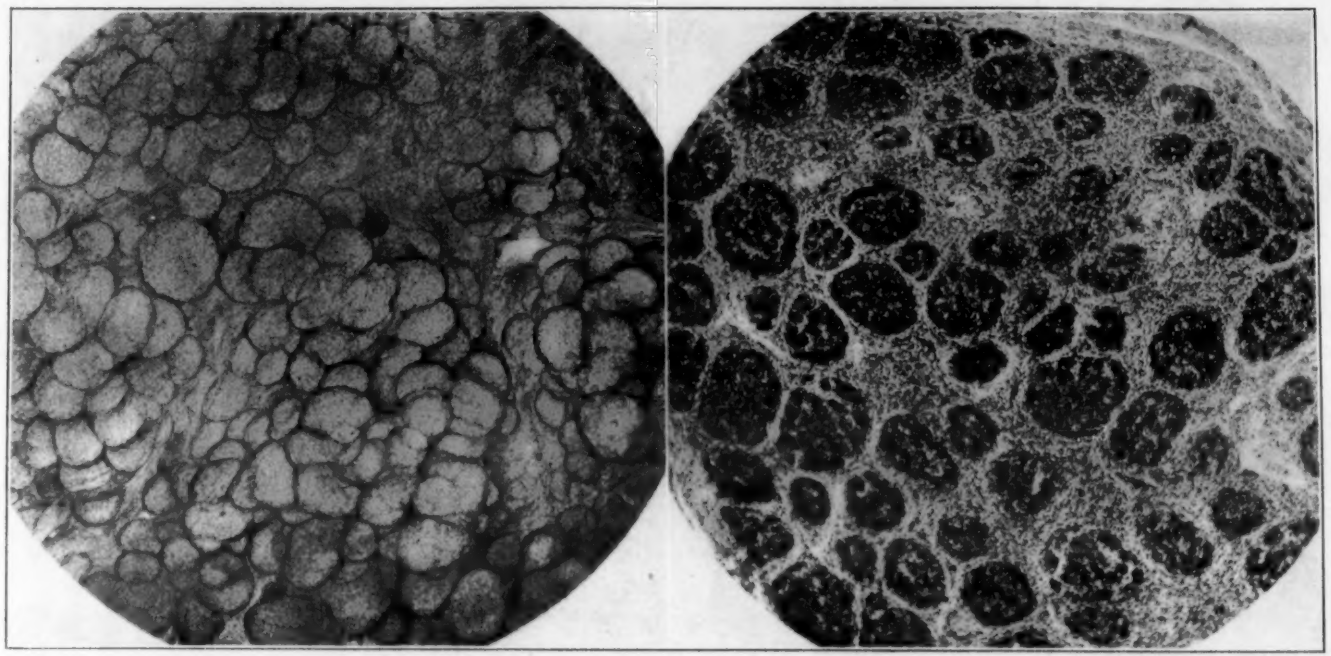

FIG. 1. Portion of a parasitic nodule pressed between two glass slides and unstained. Shows the characteristic grape-like cluster which differentiate nodules caused by parasites from tuberculous nodules in the lungs of swine. x 24.

FIG. 2. Stained section of a parasitic nodule, showing distinct grape-like clusters of lymphocytes scattered through the nodules. Sections, 10 microns.. Stain, hematoxylin and eosin. x 60.

Of the 28 specimens showing both species in the bronchioles, only five showed associated nodules with degenerated parasites present. Only 29 specimens showed nodules with a degenerated parasite present in each and, of these, six were specimens that showed no adult parasites in the bronchioles.

Examinations were made of lung specimens gathered promiscuously from nine different groups of swine, representing quite a wide range of territory from which these animals were obtained. It will be observed, with reference to frequency of occurrence, that *Metastrongylus elongatus* and *Choersotrongylus pudendotectus* occur in the ratio of 31:7. The percentage of lungs with nodules showing degenerated parasites was 38.6 per cent of the total number of lungs showing nodules. Since all of the nodules in the lungs were not examined, the possibility that a higher percentage of lungs with nodules contained degenerated parasites also is not excluded.

Microscopic Description of the Nodules

The nodule is a lymphatic hyperplasia in which the lymphocytes are springing from the peri-bronchial lymph tissue around the small bronchioles. This lymphatic hyperplasia in most cases entirely surrounds the bronchiole.

These parasitic nodules are made up of dense, nearly circular, grape-like clusters of lymphocytes, which vary in size from 88 to 500 micro-millimeters in diameter. In most instances these circular lymphatic accumulations are so numerous that they are in contact with each other, giving the nodule an alveolar appearance, while in a few cases they are separated from one another.

These parasitic nodules resemble somewhat a normal lymph-node. The grape-like clusters of lymphocytes in the nodules resemble the lymph follicles in a normal lymph-node in size and shape. They differ, however, in location. The lymph follicles are situated near the periphery of a lymph-node, while the grape-like clusters in the parasitic nodules are in most cases evenly distributed throughout the nodule. The grape-like clusters in parasitic nodules differ from the lymph follicles of a lymph-node in the arrangement of the lymphocytes. In the lymph follicle the lymphocytes are more dense at the periphery of the follicle, while in the grape-like clusters in parasitic nodules the lymphocytes are evenly distributed throughout the cluster. No blood-vessels were observed within these clusters, whereas lymph

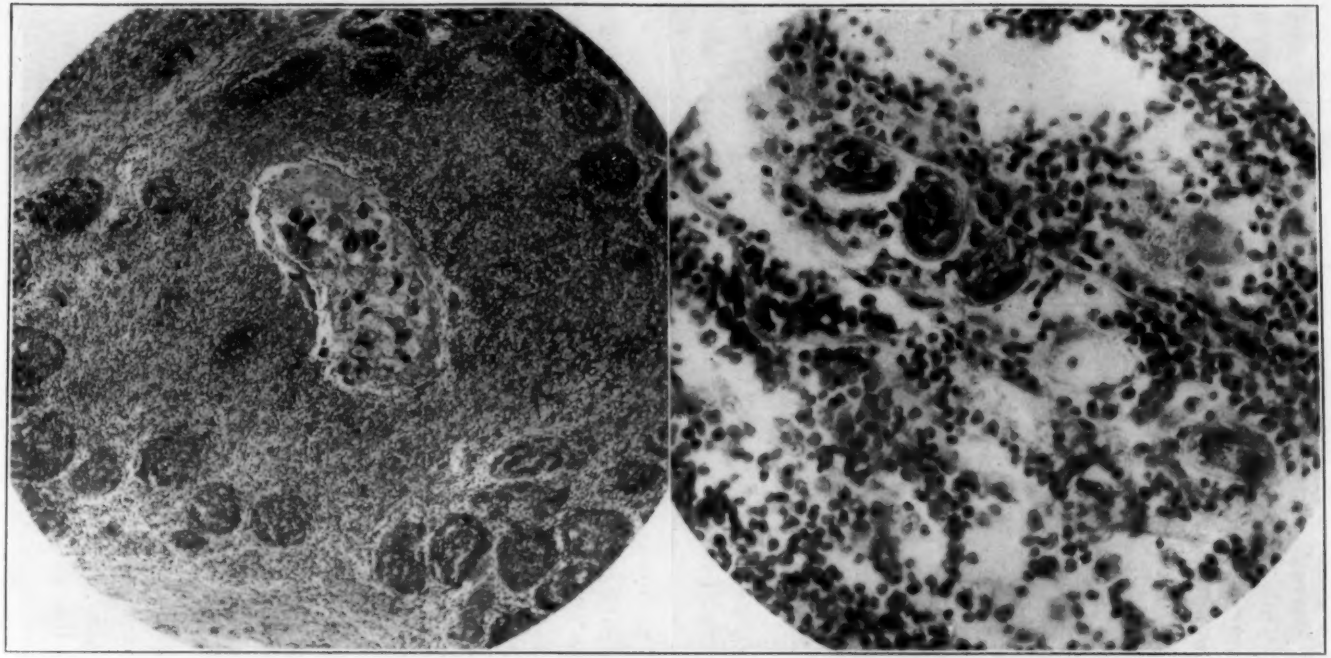

FIG. 3. A portion of a degenerated parasitic containing ova is seen in the center of the picture, while around the periphery are the characteristic grape-like clusters of lymphocytes. Section, 10 microns. Stain, hematoxylin and eosin. x 60.

FIG. 4. Stained sections of a parasitic nodule showing ova containing embryos within a degenerated bronchiole. Section, 10 microns. Stain, hematoxylin and eosin. x 310.

follicles usually contain blood-vessels. Mitotic figures are to be found in both.

Owing to the uniformity and contour of this alveolar arrangement which is always seen in these nodules, one might easily be misled into believing that the air-vesicles have become filled with lymphocytes. That such is not the case is evidenced by the absence of transitional forms of the cells forming the walls of the air-vesicles and also by the presence of a narrow, flattened zone of air-vesicles surrounding the nodules, due to pressure of the encroaching lymphatic hyperplasia. There appears to be but little change in the walls of the flattened air-vesicles surrounding the nodules.

The nodules appear to have been formed quite rapidly, because numerous mitotic figures are scattered throughout their structure.

Usually fragments of a disintegrating parasite are found located near the center of the nodule. These fragments are readily seen in sections stained with hematoxylin and eosin, as they have an affinity for eosin, except the chitinous integument, which is readily seen as a colorless membrane surrounding the parasite. Some of these fragments of parasites contain eggs in which larvae can be seen.

Early in our investigation of these parasitic nodular formations in the lungs of swine, the question arose, "Does the parasite escape from its natural habitat in the bronchi into the surrounding lung tissue, and being unable to return to the bronchi, does it perish in the lung tissue, and during its disintegration attract lymphocytes to it, causing a lymphatic hyperplasia, or does the parasite migrate into a terminal bronchiole, and being unable to proceed farther, become imprisoned and perish?"

In order to settle these questions a large number of serial sections were made, some 260 in all, of parasitic nodules which contained disintegrated parasites. By these sections we were able to determine that the parasite does not leave the lumen of the bronchiole, but it passes forward in the bronchiole until the lumen becomes so narrow that the parasite can not migrate farther. The presence of the parasite in the bronchiole produces an irritation which causes a swelling of the epithelial lining as well as a hypertrophy of the nonstriated muscles forming the wall of the bronchiole. These processes close the lumen of the bronchiole, and the parasite, being thus imprisoned, perishes.

The disintegrating parasite, acting as a foreign body, stimulates the peri-bronchial lymph tissue to activity, thus forming the char-

acteristic alveolar lymphatic hyperplasia, which macroscopically is the nodule. This hyperplasia at first extends peripherally and later into the lumen of the bronchiole, after the epithelial lining of the bronchiole has exfoliated, due to the irritation produced by the disintegrating parasite within the bronchiole. During this process the muscular wall of the bronchiole becomes atrophied from pressure by the rapidly forming lymphocytes, and soon disappears. In sections of many of the nodules no remnant of the bronchiole can be seen, unless serial sections are prepared.

Scattered through the nodules are many eosinophile cells, which in most cases are more numerous near the periphery.

See-Lu-Hung describes the occurrence of giant cells with peripherially arranged nuclei in parasitic nodules. We have been unable to find giant cells in parasitic nodules, but we have found tuberculous nodules containing giant cells and parasitic nodules in the same lung.

Conclusions

Parasitic infestation of the lungs of swine by lungworms causes nodules which very closely resemble nodules in the lungs of swine caused by tuberculosis. One may be very easily misled if an attempt is made to differentiate these nodules by the naked eye.

In their migration in the bronchi, the lungworms in some cases penetrate the minute bronchioles and become imprisoned therein and die. They act as a foreign body, and during disintegration they stimulate the lymphocytes in the peri-bronchial lymph tissue to activity, and by their excessive proliferation produce the nodules.

The bronchi of the posterior parts of the lungs being more frequently infested with lungworms than the anterior portions of the lungs, the parasititic nodules are also more frequently found in the posterior lobes, as shown by the examination of 11,429 lungs of swine.

Metastrongylus elongatus occurred in the lungs of swine in relation to *Choerstorongylus pudendotectus* in the ratio of 31:7. *Choerostrongylus pudendotectus*, when present, was always associated with *Metastrongylus elongatus*. *Metastrongylus salmi* was not observed.

Of the 23 lungs showing parasitic nodules containing degenerated parasites, five showed both species present, and 18 showed only *Metastrongylus elongatus* present in the bronchioles.

Of the 46 lungs showing nodules without parasites, 38 of these lungs contained *Metastrongylus elongatus* alone, and in eight both species were observed.

Of the 55 lungs free of nodules, 41 contained *Metastrongylus elongatus* alone, and in 14 specimens, both species were found.

From the above facts it would appear that *Metastrongylus elongatus* produces the nodules described in this paper. The possibility that *Choerostrongylus pudendotectus* may produce nodules as well is not excluded, but since no cases of infestation with this worm alone were observed, no definite conclusions in regard to this could be drawn from the data obtained in our investigation.

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KAOLIN AS A THERAPEUTIC AGENT

Kaolin, a constituent of porcelain and toilet powder, is a beneficial remedy for Asiatic cholera. This feldspar clay, named for the Kao-Ling hills of China, has been used for centuries in that country not only in the manufacture of porcelain but by physicians for fevers and intestinal disorders. Toward the end of the nineteenth century Julius Stumpf, of Wurzburg, employed it externally for septic wounds and ulcers and internally for cholera. But its modern medical applications, with this exception, appear to have been confined, according to editorial comment in the *Journal* of the American Medical Association, to use as a filtering material, a base for poultices, and dusting powder for wounds. Recent research puts these early uses, however, on sound scientific basis. It has been found that though it is not an antiseptic agent, in fluid media, if kept in motion, it will carry down large numbers of bacteria. Thirty to sixty grams daily, it was ascertained, will change materially the reaction of the intestinal contents. Medical workers in this field are now using kaolin very successfully not only for Asiatic cholera but bacillary dysentery and other acute intestinal disturbances as well.

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CONFIRMATORY EVIDENCE THAT HABRONEMA LARVAE ARE NOT THE ETIOLOGICAL FACTOR IN BURSATTEE

By STANLEY B. FREEBORN, GEORGE H. HART *and* CARROLL E. HOWELL

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For nearly a hundred years, accounts have appeared in biological journals concerning the epithelial lesions of horses prevalent in the summer and variously called bursattee, summer sores, sandburn, raadsaar, esponja, granular dermatitis, leeches, swamp cancer, cutaneous habronemiasis and various other terms. It is very possible, and indeed probable, that included in the various discussions are several distinct types of lesions that may or may not have the same etiological basis.

The typical bursattee or summer sore is an epithelial lesion occurring at various points on the animal's body during warm weather. The initial appearance is generally in the form of small raised areas, particularly when the foci are on the legs and evidently accompanied by an intense pruritus. When lesions occur on the body, it is quite common for an area varying from the size of a dime to that of the palm of the hand to develop quickly without noticeable swelling. It is probable that the larger areas are caused by the biting and rubbing incident to the intense pruritus. These broken areas exude serum and there follows a process of ulceration which usually resists all healing efforts until the advent of cold weather, when recovery is almost spontaneous. The resulting scar is heavy, irregular, and devoid of hair. The lesions are generally located on the posterior surfaces of the front legs, the anterior surfaces of the hind legs and on the trunk; the head and neck generally remain unaffected. Some workers have reported outbreaks where atypical foci were limited to single areas of the body, such as the glans penis, the sheath, and the back of the neck. However, these cases, together with the reported incidence of internal lesions in the lungs and liver, must be scrutinized further before admitting them as bursattee lesions.

It is quite possible that the glans penis and sheath cases may have been the result of infestation with *Habronema* larvae as it

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is well known that the parasite causes a conjunctivitis when deposited about the eyelids. Cases on the back of the neck would require careful study to eliminate scabies. It is very improbable that reported internal lesions have any connection with the skin defects.

The original name, bursattee, applied to this condition in 1829 by Kerr, of the British Army, stationed in the East Indies, implies a connection with the rainy season which is coincident with the warmer portion of the year in that part of the world.

For many years this association of the condition with heat was the only etiological factor which received any attention. In 1860, Ercolani[1] noted the presence of a nematode in the subcutaneous tissue of lesions of bursattee which he called *Trichina uncinata*, noting at the same time that this parasite closely resembled *Spiroptera megastoma* (*Habronema megastoma*). Eight years later, Rivolta[2] recorded the presence of a worm in bursattee lesions which he named *Dermofilaria irritans*, which was later referred to the genus *Filaria*. This reference apparently received the acceptance of the veterinary public for even recent veterinary handbooks record "*Filaria irritans*" as the etiological agent of these lesions.

Nematodes Frequently Observed in Bursattee

The literature of the last half of the nineteenth century is replete with isolated observations of the presence of nematodes in the lesions of bursattee. In June, 1915, Railliet presented the findings of Descazeaux [4] (1915) concerning bursattee and, in his comment on the clinical symptoms, the drawings submitted by Descazeaux, and the descriptions of worms published by previous investigators, declared that *Habronema* larvae were the responsible etiological factors in bursattee. Later in the year, in a joint publication with Henry, this conclusion was affirmed and additional evidence produced to justify the claim.

Previous to this, Ransom[5] had published a short note which was later[6] expanded into a bulletin in which he explained that the embryos of *Habronema*, liberated in the stomach of the infested horses, passed out with the feces and parasitized fly maggots breeding in the manure. The larval worms were observed to pass through six instars in the bodies of the maggots and pupae and to persist in the adult fly. These parasites were found so universally in "wild" house flies, examined from different parts of the United States as far west as Colorado, that Ransom pro-

posed that it would be possible to diagnose the breeding place of captured flies as being in horse manure by the presence of these worms. This information was utilized by Railliet, in the articles referred to above, by comparing Ransom's figures of the developing worm observed in the flies with those observed in bursattee lesions by Descazeaux. The close agreement of the figures and the fact that the life history of the larval worms in horse manure and maggots strongly emphasized the possibility of a real connection, influenced Railliet's opinion concerning the etiology. However, he was doubtful as to the mode of entrance of the nematode larvae into the sores.

There is no thought on the part of the present authors to deny the presence of *Habronema* or other nematode larvae in bursattee lesions but we believe we have what appears to be a rather unusual coincidence to report: a station where summer sores or bursattee constitute a real economic problem existing in the *complete* absence of *Habronema*. With this fact in mind, it would seem that one of two alternatives was true. Either two (or more) types of bursattee exist—a parasitic and non-parasitic type, the etiologies of which are entirely different—or the reported invasion of bursattee lesions by *Habronema* larvae is an accidental matter and of no etiological significance.

Observations of the Authors

Our contentions are based on the following data. Since the establishment of the college Percheron stud at Davis, California, a town in the central valley section of California, bursattee of the typical sort reported in veterinary pathology has been a regularly recurring problem every summer in certain horses. At no time have all the horses in the stud been affected, although certain individual horses have shown typical lesions on successive summers. No effort has been made to segregate the affected horses, that those unaffected might be protected.

In the summer of 1919, Dr. F. M. Hayes, of the Veterinary Science Division, in an attempt to substantiate Railliet's findings, collected 65 flies from about the sores of affected horses and sent them to one of us (S. B. F.) for examination. Fifty of these flies were dissected but no larvae of *Habronema* could be found. This summer (1926) we were interested to note that certain of our horses, as usual, were badly affected with bursattee while others confined in the same corral and groomed with the same implements remained unaffected. Furthermore, some of the

unaffected horses received cutaneous injuries and abrasions which healed in a normal period without any indication of bursattee formation. This, together with our findings of 1919, led us to doubt that a specific organism was involved.

It is interesting, at this point, to note that although the parasitic theory of causation has been generally accepted, nearly every investigator has noted that some horses were unaffected although kept under conditions identical with those for the affected horses. Thus Law[7] remarks:

> The presence of the worm in the center of the caseous debris of the lesion implies that it is the essential factor of causation. It is not, however, easy to explain the fact that but one horse in a stable suffers for year after year from the local lesions when once started, without any tendency to implicate other horses standing alongside or working with him in the team. It would seem as if the disease should be cut short by the death or elimination of the larval worms, and that other horses in the same stable subjected to precisely the same environment should also contract the affection.

One horse that died and one that was destroyed during the course of our investigation were examined specifically for *Habronema* and found to be negative. The examinations consisted of palpation of the inner surfaces of the stomach for the presence of nodules generally described in the literature as being caused by this parasite; a minute examination of the walls and contents for the presence of nematodes. The size of the parasite (we believed) rendered this method of examination sufficient. However, in a recent conversation, Dr. Maurice C. Hall has suggested that nodules are not always present and that it may sometimes be necessary to scrape the mucosa of the pyloric end close to its junction with the stratified, squamous epithelium of the esophageal end in order to demonstrate the adult nematodes which are embedded in the mucous membrane without nodule formation.

Cultural Examinations Negative

We then made cultures of mixed manure obtained from corrals in which horses affected with bursattee were present. These were heavily infested with house-fly maggots. Two hundred and fifty of the emerging flies were embedded in paraffin and dissected under binoculars, a careful examination being made of each entire fly without finding a single *Habronema* larva. Fifty-six "wild" flies trapped near the laboratory, at some distance from the corrals, were then dissected with similar negative results. A sample of feces obtained from each horse in the stud immediately after defecation and before any opportunity for contamination was present was then collected and examined for *Habronema*

embryos. A modification of the procedure of Cort *et al*[5] (1922) was followed. This consisted in wrapping a 50-gram sample of manure in cheese-cloth and suspending it, about half submerged in the center of a funnel filled with distilled water heated to 115° F. The necks of the funnels were fitted with short lengths of rubber tubing closed with Mohr pinch-cocks. After standing 12 hours, 15 cc of the fluid was drawn off from the bottom, centrifugalized and the concentrate examined under a compound microscope. In addition, a direct smear was made from each sample on a large histological slide, diluted with distilled water, and examined microscopically. In every case the examination was negative for *Habronema*, although embryonated eggs of *Strongylus* sp. were found in nearly every sample.

Several sores from two affected horses were scraped and the scrapings macerated and examined microscopically without finding any nematodes.

A recent lesion was then extirpated from a point just anterior to the hock joint of a two-year-old Percheron filly. The history of this case is so typical of the experience with the college stud as a whole, that it is outlined briefly. This filly had passed through two summers without manifesting any unusual symptoms or indication of summer sores, but during August of her third summer (1926), following a period of hot weather, the entire flexor surface of the fore legs became involved with small swellings apparently accompanied by an extreme pruritus. The swellings soon became ulcerated and showed all the symptoms of typical bursattee. The leg lesions were quickly followed by a similar condition on the back and then on the hind legs. One of these last lesions was extirpated and a section (40 by 20 by 8 mm.) was taken, extending from one side of the lesion to the other. This was fixed in Bouin's fluid, sectioned and stained. The histological examination of these sections failed to show the cardinal points emphasized by those who found nematodes in the lesions, namely, actual sections of the worms, homogeneous acid-staining areas interpreted as locations of previous nematode foci or eosinophilia.

Summary

1. There is a generally accepted belief that bursattee or summer sore is caused by the presence of larval worms of the genus *Habronema*, the adults of which are parasitic in the stomach of the horse, the normal larval host being the maggot of flies.

2. A persistent doubt has existed for many years that this explanation was adequate because foals and yearlings are seldom affected. Even among older horses kept under similar conditions not all become affected, certain horses escaping while others are affected summer after summer.

3. At the University of California stud at Davis, California, bursattee occurs every summer in the entire absence of *Habronema* sp.

4. Unless two (or more) types of bursattee occur, one being parasitic and another, similar to the cases in question, of a non-parasitic origin, the nematodes demonstrated in bursattee lesions are accidental and of little etiological significance.

5. The presentation of this negative evidence is offered in order to eliminate the theory of parasitic etiology in these cases and to prepare the way for a new hypothesis on the etiology of bursattee which we hope to be able to present in the near future.

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IMMUNITY TO SCARLET FEVER

Boys are more immune to scarlet fever than girls and country children are more susceptible than city children is the indication shown in a recent series of tests by the United States Public Health Service. The Dick tests to ascertain scarlet fever susceptibility, applied by Public Health Service officials, showed that in general children from the same family have the same degree of susceptibility or immunity. As a rule the younger children gave more positive tests than the older ones, though this was not always true. The different reactions from the toxins produced by germs of scarlatinal origin suggest, according to Dr. R. E. Dyer, assistant surgeon-general of the Public Health Service, that the different strains of scarlet fever streptococci may produce quite different toxins.

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HOG CHOLERA VACCINATION BREAKS AND THEIR PREVENTION*

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I wish to define the term "vaccination break" as an unexpected attack of hog cholera subsequent to the administration of the simultaneous treatment.

If visible sickness or death occurs within ten to fifteen days after the treatment, it is known as a "serum break." In case of a serum break there is a possibility that hog cholera virus other than that injected produced the sickness or death, in which instance both substances used might have been impotent instead of the serum only.

Sickness or death occurring after fifteen to thirty days is known as a "virus break." However, if the virus given is entirely inert, furnishing no test for the serum given with it, and an exposure to virus from another source produces sickness after fifteen to thirty days, there is no way of knowing by field observations whether the virus only or both virus and serum used were impotent.

These definitions presuppose that the method of treatment has been wisely chosen and proper technic and doses used.

Too many vaccination breaks occur at all times, but during the past year they have occurred by the thousands. The loss on hogs by unthriftiness and death has been enormous. The confidence of farmers and, in some cases, practicing veterinarians has been badly shaken. The influence which hog cholera vaccination breaks have upon a countryside are tremendously important. It takes years of the most successful vaccination to overcome the skepticism caused by one vaccination break in a neighborhood.

A wave of cholera such as the swine industry of this country has just experienced, one in which many localities have been piled high with dead hogs, is said by many to be due to the unusually large number of susceptible hogs which farmers carelessly failed to have immunized. The unimmunized hogs are serious effects of causes that lie deeper. Two of the most im-

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portant causes of these periodical calamities are: first, the high cost of vaccination, and second, vaccination breaks.

The farmer must choose whether he will pay the high cost of vaccination and perhaps have cholera artificially introduced into his herd by a vaccination break, or save the large vaccination bill and risk natural infection. About every ten to twelve years a considerable number of farmers come to decide in favor of the latter course and in the same way that dry weather and high winds are favorable to the spread of fire over areas of inflammable material, so excessive rain with its accompanying floods are favorable to the spread of cholera virus over areas of highly susceptible hogs. The stage was set last spring and summer and cholera reached its climax during the unusually wet fall.

Hog Cholera Waves

Some are now boasting that they prophesied a wave of hog cholera would pass over this country in 1926 and that they warned the public to protect swine herds against it. Does it really require any extraordinary knowledge or foresightedness to predict when these waves of hog cholera are going to come? Since 1887 this cycle of events has occurred every ten to twelve years, so it would seem that the 1926 hog cholera disaster is merely history repeating itself. Just another experience, which will stimulate for five or six years, when gradually but surely it will lose its influence. After ten to twelve years of cumulative action a hog cholera wave will again shock the same old system of cholera control. Carrying this figure still further, it seems that each catastrophe has less effect upon the powers that have the production and use of anti-hog cholera serum and virus in their hands. We are taking these waves of cholera too much as a matter of course. We are becoming dangerously tolerant of them.

The 1926 wave of cholera among our susceptible hogs, which newspapers have written much about, was accompanied and greatly enlarged by another wave about which less has been said. This brings me to a chain of events which in one year resulted in our highest wave of vaccination breaks. Last spring and early summer considerable quantities of impotent serum and in some cases impotent virus were used. The impotency seemed to be due to the fact that the products were near the age limit, which at present is too long. In late summer and early fall, as the cholera wave reached its height and the demand for serum

increased, a flood of impotent serum without government test covered the Corn Belt states. We got the side-wash of that flood in New York state. There is evidence that certain serum companies took advantage of the situation and sold serum that might have been valuable for its antiquity but was absolutely worthless for the function it was supposed to perform. The natural result was thousands of vaccination breaks, with serum breaks in the majority.

Following the breaks the usual consultations were held between the practicing veterinarian, the serum-producer or his representative and the farmer, with the sick hogs also present. The same excuses and alibis used for the last fifteen years were certainly worked overtime in 1926. Hemorrhagic septicemia, necrobacillosis, suipestifer infection, separately or mixed, flu, parasitism and baby-pig vaccination furnished channels by which in some cases the practitioner and serum-producer attempted to escape blame. Nobody cares to have the responsibility of a break fixed upon him. Therefore, the easiest way out is to blame it on weather conditions, an unusual prevalence of other infections, etc., in other words, things that are more or less out of control of mankind or which occur now and then accidentally in spite of eternal care and vigilance. Such diplomacy should frequently be spelled d-i-s-h-o-n-e-s-t-y. A veterinarian, be he serum-producer or practitioner, or both, who does not make an honest effort to find the true cause of a vaccination break and inform the owner of it, is not worthy of patronage. He is false to the man who is paying him for his services and deserves to lose his client.

Re-Vaccination Is Indicated

Printed evidence has come to hand where a serum company describes typical vaccination breaks, gives *B. suipestifer* and *B. necrophorus* as the cause, and follows this by advocating the use of certain powders and mixed infection bacterins—which they can supply—to stop the losses, and further states that re-vaccination with serum and virus is of little or no benefit. The error in diagnosis is indicated clearly enough by the history and lesions described. The offender, however, is not satisfied with this and goes a step further in the wrong direction when he states that re-vaccination is of little or no benefit. If serum and virus of standard potency can be obtained, they should by all means be used to stop the losses in a vaccination break. One need not

expect to repair all damages immediately with serum alone or with serum and virus simultaneously given, but certainly the use of these substances is indicated as the main treatment.

A vaccination break, when it occurs, should be handled in much the same way as an outbreak of hog cholera in a susceptible herd. Animals that are comatose and moribund should be killed and burned or deeply buried. A large dose of serum alone should be given those showing a temperature reaction and other clinical symptoms of cholera. Many give serum and virus instead of serum alone, with results seemingly as good, if not better. Animals still normal should either be re-vaccinated with serum and virus or watched closely. The safest way is to re-vaccinate. However, if the herd is large and the trouble limited to a few animals, it is frequently advisable to wait and watch closely for the slightest signs of an extensive break. It is probable that a considerable number in the herd will have enough immunity to protect them until eight to twelve months of age. If they are to be kept longer than a year, or if they are to be used as hyper-immunes, they should be re-vaccinated and the sooner the better.

In the case of an untreated herd the handling is slightly different. All normal animals, if exposed, should be vaccinated at once and those that have not been exposed but are on the same farm or in the immediate vicinity, are in a great deal of danger, a fact which should always be emphatically explained to the owner.

Disinfection Called For

Whether cholera occurs in a treated or an untreated herd, after the sick animals have been removed the contaminated quarters should be thoroughly disinfected, then thoroughly cleaned, then disinfected three or four times more, at twenty-four to forty-eight-hour intervals.

As soon as cholera is diagnosed neighbors should be notified of the existing danger and advised either to vaccinate or exercise every precaution against carriers of the infection.

Other conditions such as swine plague, necrobacillosis, or infection with *B. suipestifer* invariably appear during a vaccination break but, in a large majority of cases, they are infections secondary to the devitalizing effect of hog cholera virus. This is true of practically every case of hog cholera that becomes at all chronic, whether in a vaccination break or in an unvaccinated herd. Pathological changes like pneumonia and ulcerations in

the intestines are so frequently observed that they may almost be considered a part of the hog cholera picture. But let us not forget the history, clinical symptoms and lesions which are characteristic of hog cholera and those which are characteristic of other infections. The only sane way to prevent or stop the action of the secondary infections is to prevent or stop the action of the hog cholera virus which is primary.

Swine plague bacterins, mixed infection bacterins, necrobacillosis powders and kindred products are questionable lines of treatment under any condition and it is nothing short of malpractice when such substances are used in cases where the use of serum alone or serum and virus are so plainly indicated. Adverse weather conditions, either excessively wet with mud and floods or excessively dry summer weather with heat and dust lower the natural resistance of swine and may cause a greater prevalence of bacteria and surely causes a wider distribution of them. When in addition we find poor methods of swine management, the natural physiological result is part or all of a herd with stunted growth and weak constitutions. Microörganisms such as *B. suisepticus* and *B. suipestifer* are part of the bacterial flora of the respiratory and digestive tracts of many normal hogs. They remain there in a latent state as a potential danger but become parasitic only when the normal tissue resistance is lowered or when the tissues become injured, or both. The invasion then becomes an infection. Fall pigs, especially late fall pigs, are often good examples of these conditions. They are easy prey for infestations and infections and fatalities frequently occur among such animals from causes other than cholera. The practitioner should carefully observe clinical symptoms and there is usually an opportunity to hold an autopsy. The results of his investigation should guide the steps that he takes toward protecting runty pigs against cholera.

Impotent Serum Largely Responsible

Doubtless during the past year, as in other years, some unthrifty herds have been improperly treated by the simultaneous method but even though the number of such herds may have been unusually large and the weather unusually unfavorable, the unbiased evidence is that the true cause of the unusual number of vaccination troubles was impotent serum and virus, mostly serum.

The prevention of hog cholera vaccination breaks is a coopera-

tive procedure. All parties concerned are exposed to loss when a break occurs. The farmer is sure of getting his. He must pay his vaccination bill although his hogs die later with cholera. The practitioner may lose the confidence of his clients which he has worked day and night to gain, if the blame can be fixed upon his shoulders. The serum-producer has the reputation of his products at stake. The government has its political prestige to lose, as an efficient guardian of the swine industry.

Although the farmer is the most certain of financial loss in a vaccination break, he has the least and simplest responsibilities in preventing one, that is, providing he has employed a qualified veterinarian to do the immunizing. He should carry out instructions given him by the practitioner at the time treatment is administered. These instructions should include cautions against producing fatigue by driving, hauling or shipping individuals immediately before or after vaccination; against surgical operations like ringing and castrating. Not even an ear should be marked at vaccination time. Feed should not be changed suddenly and should be decreased for a few days before and after treatment. The animals should be kept hungry. A heavy corn or barley diet is especially to be avoided. The animals should be confined to clean, dry quarters, at least until the needle punctures are closed. And above all else, the owner should be told to give immediate notice if signs of sickness occur. In short, the farmer's duties consist of preserving or raising the natural resistance of his animals.

Responsibilities of the Practitioner

The practitioner's responsibilities are more complex. He must prevent breaks and do it as cheaply as possible. His part in preventing breaks consists of determining the thrift status of the herd, which involves a knowledge of the natural habits of hogs, feeds and feeding, sanitation, also physiology and pathology. In brief, he should know swine and swine diseases. He is fortunate if he has had practical experience in handling swine before taking his veterinary course. It will aid him in detecting unfavorable care and management and in advising sensible and practical improvements in methods. He should never neglect to instruct the owner concerning the care of a vaccinated herd.

We must do a vaccination not only better than the farmer can do it but we must do it enough better to be worthy of a good fee and still leave him with a good profit on our services A layman

can be taught the simple procedure of handling a syringe as easily if not more easily than he is taught the steps in serum-production in the serum-plant. A superior dexterity in hand ing syringes is not sufficient reason for expecting employment to do this work. If we cannot prevent breaks any better than the farmer, then plainly enough our arguments become invalid.

One outstanding way in which the practitioner can do much to prevent serum breaks is to regulate the dosage of serum to suit the case in hand. Every individual presented for treatment means a decision on dosage. There are four important factors which should influence dosage: first, weight of the animal; second, physical condition; third, cost of the serum; fourth potency of the serum.

Weight should be estimated liberally. If in doubt, one should always figure the dosage on a high estimate rather than a low one.

An animal in poor physical condition calls for an increase in dosage. Unthrifty animals will withstand treatment by the simultaneous method as well as by any other if the dosage of serum is sufficiently increased. A pig that shows the slightest temperature reaction or any other clinical symptoms of cholera, after vaccination, has not received enough serum protection. If an animal is of the unthrifty kind, especially if it is infested with ascarids or lungworms, a difference of five or ten cubic centimeters of serum may make the difference of saving or losing it. The margin of safety should always be larger when treating unthrifty animals, for their natural resistance varies more and their tissues seem to respond more slowly with the production of antibodies.

Cost of Serum a Factor

The cost of serum has in the past been closely related to its use as far as the practitioner and farmer are concerned. The practitioner knows that the larger the dose of serum he uses, and therefore the safer he makes his vaccination against breaks, the more it will cost the farmer. A prohibitive cost may be reached and the farmer may decide to discontinue his immune herd or employ a competitor that does not fear breaks so much and therefore uses a smaller margin of safety in dosage. The man who plays absolutely safe and constantly uses the maximum dosage on the label, with a little added, may actually be causing the owner an unnecessary expense. The important point in this connection is that a closer relation between cost and potency

should exist when the practitioner and serum-producer settle their bill as well as when the practitioner and farmer settle theirs.

The practitioner should be more accurately informed regarding the potency of the serum. The dosage on the bottle labels as now practiced is not sufficient. He should be enabled to judge more closely the dosage of a given serum, that is, the dosage that will safely prevent breaks without waste. He should know where the breaking-point is in a serum, in order to prevent vaccination breaks. No matter how much the practitioner knows about swine and swine diseases, or how carefully he determines the natural resistance to which he must add serum, in order to withstand the virus given in the simultaneous treatment, he is not in position to give his client the best possible service unless he knows the breaking-point of his serum, as determined by test and *recent* test.

At present the breaking-point of a serum is not being located accurately enough, which in large part means not often enough or recently enough, and the practitioner is not properly informed regarding it. A serum-producer can take serum that broke for the practitioner and, by increasing the dose, vaccinate without trouble, for he knows his serum while the practitioner does not.

Virus breaks are not so common. Slaughtering hogs from eight to twelve months of age without doubt hides the low immunizing properties of much virus A virus may have potency enough to immunize for eight to twelve months but not enough to immunize for from eighteen to twenty-four months. Obviously the younger the pig when vaccinated the longer he has to go to market age. This may be a reason why virus breaks have seemed to occur more often in pigs that were given the simultaneous treatment under six weeks of age.

All Vaccinated Hogs Are Not Exposed

Another condition that doubtless prevents the discovery of impotent virus is the fact that quite frequently vaccinated animals are not exposed subsequent to vaccination. This is an important factor in increasing the number of breaks during a hog cholera wave. At such a time natural infection is so prevalent that the virus used in the simultaneous treatment gets a real test by the animals being subsequently exposed to the natural infection and many herds break. At times other than during a hog cholera wave the impotency of such virus would never come to light.

In regulating dosage of virus the main thing is to be sure that each animal gets virus and it is a good practice to dose liberally. The greatest care should be exercised not to contaminate the premises with it. This is one reason why the writer favors a brush and a solution of liquor cresolis compositus over tincture of iodin on a swab to be used at point of injection. The cresol solution can be used in sufficient quantities to dilute and kill the virus that leaks out through the needle puncture when the needle is withdrawn. The use of cresol solution applied with a brush has another advantage, that of mechanically cleaning and disinfecting, while tincture of iodin on a swab disinfects only as far as the dirt upon which it is placed permits.

The serum-manufacturer is responsible for producing, testing and distributing serum and virus. This should involve more than running his products through a pipe-line to the user and standing at the meter to collect the money. I will again omit a discussion regarding details such as efficiency and sterilization of equipment for we all know the value of suitable and sterile equipment, as well as of surgical cleanliness, and that they should be the aim in the production and use of serum and virus.

The serum-producer is responsible for the virus and serum he sells. Virus is the backbone of serum-production. Without a highly potent virus, a solid, lasting immunity cannot be produced and a high-grade hyperimmune is impossible. Acute hog cholera is necessary for the production of virus of highest potency. Virus drawn from a case that tends toward the chronic form may have a fairly high killing-power when injected into susceptible shotes if it is given sufficient time, and good lesions in chronic cholera are the rule, but it does not produce the highest grade of immunity when used in the simultaneous treatment, neither will it produce a highly potent serum when used in hyperimmunization.

Selecting the Virus Pigs

Pigs from eight to sixteen weeks old, farrowed by susceptible sows, are the best to use for virus. Virus from younger pigs from the same source is just as good but the quantity collected is too small. Older pigs from susceptible mothers and pigs farrowed by immune mothers are apt to have considerable resistance. Upon injection with the virus they frequently do not become as acutely sick as younger pigs farrowed by susceptible sows. In order to produce a good, sharp virus, a pig should have a tem-

perature of about 105.5° F. the fourth day after injection, 106.5° the fifth day, and 107.5° the sixth day. He should refuse feed the fourth or fifth day and be sick enough to be killed the sixth or seventh day. In comparison, older shotes and shotes from immune mothers sometimes have a temperature of about 103.5° on the fourth day, 104.5° on the fifth day, 105.5° on the sixth and seventh days, and then start downward. These pigs eat indifferently but do not entirely refuse feed. If they are killed some time after the seventh day they show good cholera lesions and their virus will produce sickness and finally death in susceptible shotes but it is not the sharp virus necessary for use in the simultaneous treatment and in the process of hyperimmuization. Another important factor in this same connection is that the longer it takes a virus pig to become sick enough to kill, the more likely the virus is to be loaded with microörganisms. An invasion of microörganisms from the surfaces of the mucous membranes frequently produces a true septicemia in a pig with chronic cholera. We do not know just what effect the various microörganisms have on the keeping qualities of virus or on hyperimmune hogs but it is quite likely that their effect is harmful rather than beneficial. Under the very best conditions virus loses its immunizing properties quickly. It should not be used after it is thirty days old and for young pig immunization a ten- to twenty-one-day limit would be much better. Virus of this kind and age, properly used, will produce a high grade of immunity when used by the simultaneous method and a highly potent serum when injected into a long-time immune in sufficient quantities.

Serum and Virus Are Perishable

In some respects serum and virus resemble milk. They should be cleanly collected, immediately defibrinated and iced, then strained and preserved and stored in a cool dark place. Fifty degrees Fahrenheit is thought to be a favorable storage temperature.

Both substances should be considered perishable. When properly preserved they are, of course, not quickly perishable like milk, fruit or vegetables, but at the same time they cannot be placed in jobbers' and retailers' hands as are staple articles like sugar and coffee.

There are three bits of data that should never be separated from serum and virus. The first is the date on which they were bled;

second, the date on which the serum was tested and, if retested, the date of retest; third, the test itself, showing their potency at time of test.

The sooner serum and virus can be used after bleeding the better. Jobbing of virus is especially dangerous. It has been commonly thought that as long as a virus would produce sickness and finally death, with good cholera lesions, that its immunizing properties and hyperimmunizing properties could be depended upon. The writer believes this idea to be erroneous and that virus over thirty days old should not be used. A weak virus not only causes virus breaks but, when used in hyperimmunizing, its low potency is reflected in the serum made from it, and may be the indirect cause of serum breaks. A low grade of serum, from a low-grade virus, will not stand age. It very soon becomes worthless.

There has been sentiment among some serum-producers that the serum test is a useless procedure and they should not be required to test their serum. This might better be a part of the government inspection. As soon as the manufacturer has a series ready for test it should be put under lock and key, a composite sample taken by a government inspector and sent or taken to a government station, removed from the serum-plant which produced it. The test should also be kept under lock and key. Serum still on hand nine months after being produced should be retested and a one-year age limit put on all of it.

The government would do much to prevent vaccination breaks if it would go still further and follow its test by issuing a certificate to be sent to the practitioner with every shipment of serum. This certificate should show the dates, which include the bleeding of the series, a ten-day temperature chart with dates, and suggest the dosage to be used based on the test. The date when a retest is due and the expiration dates should also be noted and cautions regarding the care of both serum and virus given. A retest should be handled in the same way.

Changes in Present Test Desirable

A test that would show the practitioner more accurately the breaking-point of a serum is the eight-pig test. Pigs ranging in weight from 45 to 75 pounds, from susceptible sows, should be used. All eight should be given 2 cc of virus. Two of the pigs should receive 10 cc of serum, two 15 cc of serum and two 20 cc of serum. The other two should receive no serum. This range

of doses, with the actual weight of each test pig, along with temperatures and other clinical symptoms, gives more information on the potency of serum than the seven-pig test, having five 20-cc serum pigs and two virus pigs.

It cannot be denied that research work on this great economic problem is being sadly neglected. This was well demonstrated by the program on swine diseases at the last meeting of the United States Live Stock Sanitary Association. On that program there were plenty of general discussions concerning old problems but no new knowledge on problems old or new was presented. Tuberculosis, infectious abortion in cattle and various poultry diseases seem to be the popular subjects for research.

There are problems concerning the immunizing of young pigs which the government and others have experimented upon to a point where it would seem that an extensive demonstration should be conducted upon the basis of the results. There is no doubt but that the immunization of young pigs, if properly conducted with fresh, potent serum and virus, offers the most promising solution for all problems concerned with the hog cholera situation. A very active campaign, including demonstrations given by qualified veterinarians by agreement with farmers and financed by the state or government, would do much to restore confidence among veterinarians and farmers, and furthermore, if private serum-plants cannot meet the demand for suitable serum and virus, a demand which naturally is a fluctuating one, state serum-plants should be ready to supply the deficiency. The welfare of the privately-owned serum industry should always be a consideration secondary to the welfare of the swine industry.

Conclusions

In conclusion I wish to say that the wonderful work that Drs. Dorset, Niles and McBryde did when they developed the simultaneous treatment has not led us astray. The origin of the simultaneous treatment was sound. The thousands, yes millions, of hogs that have been immunized by the simultaneous method and later successfully hyperimmunized bear testimony to its efficiency. But the simultaneous treatment has been abused and misused in many ways. Impotent serum and virus have tried to lay the blame on adverse weather conditions and microörganisms like *B. suiscepticus*, *B. suipestifer* and *Actinomyces necrophorus*, which sporadically cause sickness and death among stunted

animals. It has been abused by the practitioner who is at present poorly informed regarding the serum and virus he uses but too many times has used poor judgment and technic. It has been misused by untrained, unskilled hands in farmer vaccination.

Research on the very important problem of hog cholera and its control has lagged behind but some experimental work has been done and fifteen to twenty years of practical experience should certainly teach us something. We know that the simultaneous method, when administered properly with potent serum and virus, produces an immunity as nearly absolute as any known.

We know too, that lowering the cost of vaccination with our present knowledge can best be accomplished by vaccinating young pigs. Vaccinating adult swine should be discouraged. Low prices on inferior serum have proved disastrous.

Whenever we can show the farmer in hog cholera-infected regions that he can have his young pigs immunized cheaply and safely we will eliminate two of the most important causes of hog cholera waves. We can do this whenever we run the production, tests, distribution and use of serum and virus by rules and regulations based accurately upon the natural laws that govern these products.

We must educate the farmer to have his vaccinating done at the right time. We must obtain and enforce proper rules and regulations regarding the production, testing and distribution of serum and virus.

Until we do these things, the high cost of vaccination and vaccination breaks will continue to produce a country full of susceptible hogs ready to be swept by a hog cholera wave whenever weather conditions become favorable to the spread of virus which exists here and there in nature at all times.

DR. IDUATE RETURNS

Dr. Angel Iduate has just returned to Cuba from Mexico, where he was sent by the Cuban government on a special mission to investigate foot-and-mouth disease. Dr. Iduate states that the disease exists in some districts in the states of Vera Cruz, Tabasco, Campeche and Chiapas, and he praises the efforts being carried out by the Mexican government to combat aphthous fever. He states that the loss from this disease in the affected localities is about 3 per cent.

N. S. M.

CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

ACTINOBACILLOSIS IN A FEED-LOT

By A. J. DAMMAN, *Vancouver, B. C.*

Actinobacillosis is a disease of the ox, resembling actinomycosis in some respects, but due to a bacillus which grows in the system in a radiating manner.

History: This disease was studied by Lignieres and Spitz, who encountered it in an epizootic form in Argentina during the summer of 1900-1901. It was widely spread and attacked cattle of all ages. It has also been encountered in France and, in the opinion of Nocard, it will be found everywhere and is confounded with actinomycosis.

In Buchanan (Nomenclature and Classifications) the family of Actinomycetaceae is divided into the following genera: Actinobacillus, Leptotrichia, and Actinomyces.

The bacillus form was isolated by Brumpt, in 1910, and was called Genus 1 Actinobacillus. Filament formation, resembling streptobacilli. In lesions, no mycelium is found, but, at the peripheries, finger-shaped branched cells are visible.

Habitat: Abscess formation in bovines, affecting principally the lymph-nodes.

CASE REPORT

On March 15, 1926, I was called to make a diagnosis of a disease that was supposed to be "lumpy jaw" (actinomycosis). Upon arriving at the feed-lot, I found some 1150 steers and calves.

The manager in charge took me to the affected pen, which contained some twenty-five to twenty-seven infected animals. Upon a clinical examination, I found the following symptoms:

Animals standing with their noses elevated, just a little above normal; tongues protruding about two or three inches; saliva falling from their mouths in long strings; glands of the buccal cavity enlarged; large lumps on their jaw-bones. Upon palpation, some were hard, others were loose in the skin. Animals which had been affected longer showed a faulty prehension of their

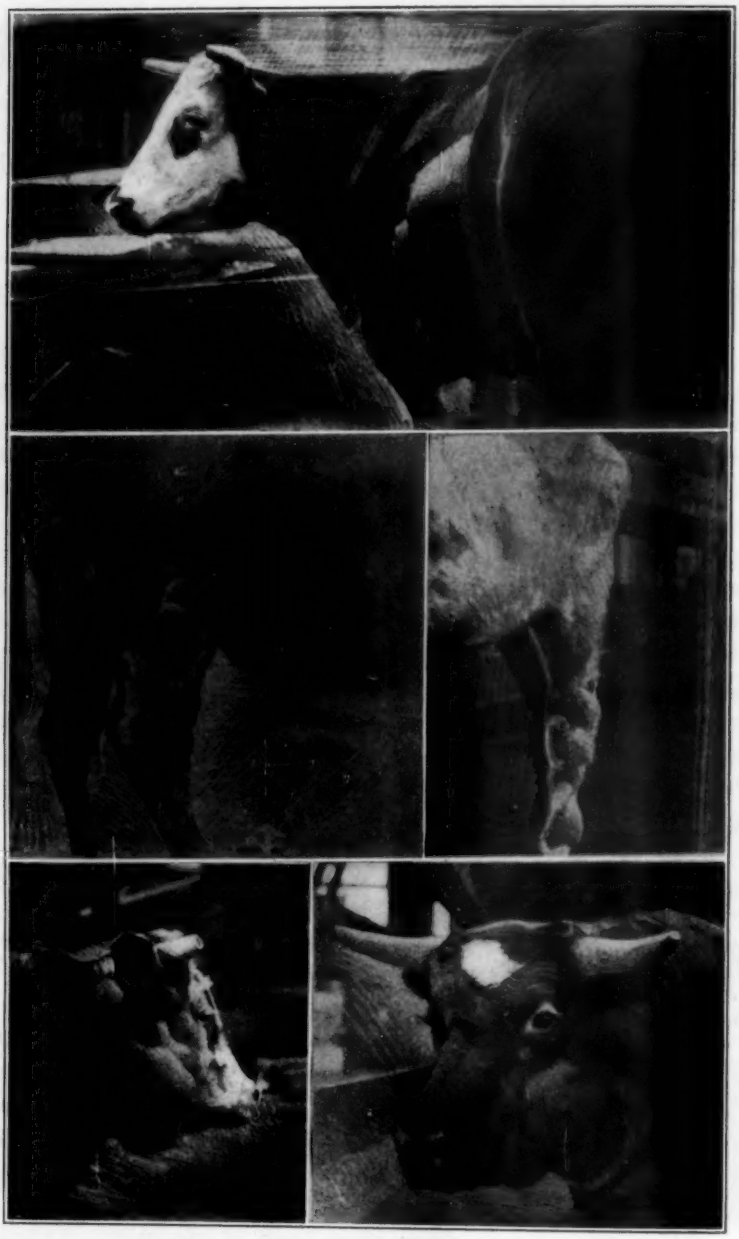

FIG. 1. Different views of swellings shown by cases of actinobacillosis.

food; respirations rapid; further advanced cases showed a distressed look from their eyes.

I suggested that a postmortem be held on a typical case, as it was only a short distance to an abattoir, where Dominion inspection was carried on. This was done and the diagnosis of actinomycosis was the verdict.

I then took up the kind of feed and the manner in which they were fed. Wheat screenings, finely ground, and rye bran composed the mixture, which was poured over the distillery slop, warm from the still. This was a sloppy mixture, which the cattle ate well and seemed to relish. I offered a suggestion that it might be the fungus from the rye bran causing the trouble.

A few days later I was called to see some of the animals which were lame in other pens. Upon making an examination I found large swellings in the prescapular glands; also in the popliteal glands. In some, the prescapular gland was as large as a man's head. In others, the hind legs were swollen up as large as any "lymphangitis leg" of a horse.

In these cases, the lymph-nodes broke in a few days and the exudate that came out was a whitish-cream color, with a very bad odor. A day or two following, exuberant granulations as large as small oranges made their appearance. The animals would hardly move around to get themselves food or water.

Another postmortem was made and the report from the abattoir was actinomycosis. Not being satisfied, specimens were sent to the Dominion Pathologist for a report. Through the kindness of Dr. E. A. Bruce, I got a report of actinomycosis and actinobacillosis. After Dr. Bruce's findings, the air was somewhat cleared as to why the infection was so virulent.

The pictures of portions of the affected animals will show to some extent how the disease appears from a clinical standpoint. As I have previously stated, some authorities state that actinobacillosis is confounded with actinomycosis and may be found any time in large feed-lots.

The remainder of this lot of cattle was slaughtered at the Dominion abattoir and the reports show that 95 per cent had actinomycotic lesions somewhere in the lymphatic system. Thirty-six animals were tanked for generalized condition; six for emaciation. As to how this disease became so virulent in this particular feed-lot is a debatable question.

I may state that over one year ago, two carloads of actinomycotic cattle were fed in the same yards, but I have been advised

that the yards were cleaned out thoroughly before the present lot of cattle was put into the pens.

Was it the kind of feed? The way it was fed? Or did the troughs, from which the cattle ate, make it more easy for the infection to be transmitted from one to another?

I would appreciate it very much if any member of the profession, south of the line, has had any similar outbreaks in feed-lots he will advise me through the JOURNAL.

RUPTURE OF THE DIAPHRAGM IN A COW

By JAMES K. STROCKBINE, *Bedford, Pa.*

November 29 I was called to see a pure-bred Guernsey cow. The cow was about seven years old and was purchased by the present owner about one year ago. The owner complained that the animal had always been thin in flesh and that he had been unable to improve her condition. When I arrived, the owner said the cow had been sick for about four days and that he had given one pound of Epsom salt, which had produced its results. The animal, however, still refused to eat or ruminate. The animal was tied in the cow-stable, the rumen was slightly distended with gas, but the most characteristic attitude was standing back with the chain drawn tight and her head pushed against a post or wall of the stall. There was complete cessation of rumination and peristalsis. Temperature, pulse and respiration were normal. Eyes were bright and normal, except the mucous membrane was slightly congested. The owner could not account for the condition, except that it might have been due to eating too much ensilage, that he had recently removed from the top of the silo, about five days before. Milk secretion had ceased.

Diagnosis: Atony and tympany of the rumen.

Treatment:

Tartar emetic.		
Fluidextract nux vomica	āā	1 oz.
Aromatic spirits of ammonia		
Water	āā	q. s. 6 oz.

S.—One ounce to be given every 4 hours.

I also gave one pint of strong coffee and two drams of formaldehyde night and morning.

December 1: Physical examination. Same attitude as leaning against a post, etc. Mucous membranes improved. Tempera-

ture, pulse and respiration normal. Peristalsis was absent and percussion of the ventral portion of the right thorax in the region of the sternum showed tenderness. Auscultation showed râles. The rumen was still distended. I prescribed:

Tartar emetic	1 oz.
Dilute hydrochloric acid	3 oz.
Water	q. s. 6 oz.

S—One ounce to be given every 4 hours in water.

I advised moderate exercise and kneeding of the rumen with a fist and knee, warm water to drink and a bucket in front of the animal at all times.

December 2: Owner came to office and reported no change. I gave the owner two one-ounce capsules of ammonium carbonate and nux vomica in the proportion 2 to 1, to be dissolved in one pint of water, and given as a drench night and morning. I prescribed:

Tartar emetic	1 oz.
Strychnin sulphate	3 grs.
Dilute acetic acid	q. s. 6 ozs.

S.—One ounce to be given every 4 hours in water.

December 6: Animal in same condition. Temperature, pulse and respiration normal. Eyes bright, rumen distended. Inserted the trocar in rumen and very little gas escaped, but a small amount of frothy, fetid liquid boiled out. Rumen contents appeared soft and semi-liquid. The stomach-tube and pump was attached to the trocar and four gallons of warm water, one-half ounce of formaldehyde, one capsule of ammonium carbonate and nux vomica pumped into it. In about ten minutes the cow ruminated ten to twelve times; assuming a very natural attitude and peristalsis was noticeable. The trocar was left in over-night.

December 7: Owner reported over the phone that he believed the cow was improved, as there was no bloat and she was ruminating.

December 8: Owner reported over the phone that the animal was no better, there still being gas, and that I should come out. When I arrived, the gas was gone and the cow was ruminating. Temperature 103,4; pulse and respiration normal. After about ten minutes rumination ceased. Advised putting the animal in a box-stall, but there was no box-stall that could be used that would be an improvement over the present location. I pre-

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scribed two one-ounce capsules of ammonium carbonate and nux vomica; 4 ounces of salicylic acid and a one-ounce capsule of tartar emetic, all administered with a balling-gun at one time.

December 10: Owner came to the office and reported that the cow was about the same, there being no bloat and that she drank an extra amount of water and ate heartily of salt. He also said there was a slight diarrhea. I advised the owner that the case looked unfavorable, and that it appeared to me like either traumatic indigestion, foreign bodies, either sharp or blunt; hair balls, tumors, etc. Rumenotomy was the only thing left to try.

December 12: Cow was found dead in the morning.

Postmortem: General peritonitis and enteritis, local adhesions around the wound produced by the trocar. The peritoneal lining of the rumen was much inflamed. The diaphragm showed two small ruptures, the smaller one-half inch in diameter, where the adhesion to the reticulum produced a rosette-like formation on the thoracic side of the diaphragm. The larger rupture was one and one-half inches in diameter, on the right side, about four inches above the sternum, through which there was an omental hernia, which showed great serous infiltration and proliferation, the volume of the entire contents being about one quart. The liver showed cloudy swelling and fatty degeneration. Three nails, one short wire and two small pebbles were found in the reticulum, but there was no noticeable perforation of the rumen or reticulum. The contents of the fore-stomachs were very liquid. No other lesions were noticed, except those of general sepsis.

SCIRRHOUS CORD IN A PIG

By J. F. BULLARD, *Lexington, Ky.*

Assistant Veterinarian, Department of Veterinary Science, Kentucky Agricultural Experiment Station

It was thought advisable to report this case, as it shows to what an extreme stage a scirrhous cord may develop if left alone.

Subject: A two-year-old pig.

Duration of condition: Approximately eighteen to twenty months.

This pig, with eleven others, was brought to the Experiment Station for treatment. Of this lot, four had umbilical hernia; four, scrotal hernia; one, actinomycotic abscess on the udder and three had scirrhous cords. One of the cases of scirrhous cord

attracted our attention. All of the cases responded readily to surgical treatment, with this one exception. It was decided not to operate on this animal, as his physical condition would not warrant it.

Fortunately, pictures were taken before death and a fair idea of the size of the growth as compared to the pig may be gained by examining figure 1.

The growth, a very pendulous and edematous mass of connective tissue, surrounded by skin, touched the ground. At this point there was an area six inches in diameter which was raw and bleeding, due to rubbing on the ground as the animal walked. This constant irritation also caused this part of the growth to become thickened. The widest dimension of this mass of tissue was thirteen inches.

FIG. 1. Two views of extreme case of scirrhous cord.

Locomotion was very difficult due to excessive size and weight. The accompanying illustration shows how the pig walked constantly on the toes of his front feet, the body being tipped forward.

At autopsy the pig weighed one hundred pounds. The growth was removed from the pig and was found to weigh thirty-seven pounds. The growth was found to contain a double scirrhous cord, surrounded mainly on the dorsal part by extensive edema. External palpation of this area gave the impression of a bag filled with water. The lower part was very firm and hard.

The end of each cord was about the size of two clenched fists, each cord being composed of a solid mass of very dense connective tissue, the center of which contained a small pus pocket, approximately an inch in diameter. A fistulous tract the size of a lead pencil connected each cavity with the exterior, each tract opening at the raw exposed part that rubbed the ground.

The remaining "sixty-three per cent" was greatly emaciated and anemic. The only pathological lesions noted were in the small intestine. A chronic enteritis existed, characterized by a thickening of the intestinal wall to about twice its normal dimensions. Many fibrinous tufts and numerous adhesions also were seen.

The case is a good example of castration by one who was careless in operating and in the care of the animal. At an early date this condition could have been corrected with slight expense to the owner. He might have had a big healthy pig; as it is, he lost a pig, a board bill and his time connected therewith.

SECTION OF INNER TUBE IN STOMACH OF COW

By JOHN HOBERG, *Detroit, Mich.*

Of the many indigestible objects found in the stomachs of cattle, the most unusual cases came to my notice a few weeks ago, while on postmortem inspection at one of the local abattoirs. Upon emptying the rumen, the butcher called my attention to some short pieces of rubber tubing and patches and on further examination brought forward a section of rubber inner tube, 30 inches long, which had become changed in color to an olive green, as a result of the action of the digestive juices.

The rumen was from an aged cow. Her esophagus was of normal diameter, from which can be realized the enormous distensive power of that part of her digestive apparatus. No abnormal conditions were revealed on inspection of other organs.

In another cow the reticulum contained a collection of stones, about forty in number. These varied in size from a hickory nut to a hen's egg. A plausible explanation for their presence has been offered, namely, the practice of some farmers of putting stones in the feed-boxes of horses to prevent them from bolting their feed. The supposition is that the owner of this cow tried the same method on this animal. As ruminants simply swallow all that comes between their prehensile organs without mastication, these stones did not interfere with her meal.

It is remarkable the variety of hardware that is occasionally found in the rumen and reticulum of the cow. Hair balls are found chiefly in the rumen of calves and young cattle. These are the result of the habit of licking themselves or other cattle. The hairs being indigestible, they form balls, varying in size from walnuts to baseballs, and do not seem to cause any trouble.

In the reticulum we find, nails, coal, bottle caps, staples, barbed wire, combs, jewelry, gold band rings, bones, buttons, bolts, leather shoe soles, coins (a ten-dollar gold piece was found at one of the local abattoirs recently) and other articles.

When sharp objects puncture the walls of the reticulum and the diaphragm, they may also pierce the pericardium and are the main causative agents of purulent pericarditis, which condition is frequently met with on postmortem inspection of cattle in municipal and governmental meat inspection.

THE COMPLEXITY OF GENERAL VETERINARY PRACTICE

By C. L. SANDERS, *Dayton, Ohio*

Some time ago I was called to a man's home to see if I could advise him how to eradicate fleas from his home. It seems that some time last fall he had taken a stray cat into his home and apparently the result was that this cat had more than its share of fleas. I advised the burning of sulphur candles and spraying the cellar with 5 per cent creolin. This was carried out faithfully. Several days later this was to be repeated; seemingly some benefit was derived. However, it was only temporary. In a few days there were as many in the house as before. I neglected to mention that his wife was the one for whom the fleas had a peculiar affinity, to the extent that, through silk stockings, her pedal extremities appeared as though she had small pox. They had appealed to their physician who was apparently at sea concerning fleas. Then the wife thought of a veterinarian.

As my method did not seem to eradicate the fleas, I began to fear that I had fallen down on the job, so I called up the Chamber of Commerce and asked them for the name of any firm that made a business of exterminating insects. Upon getting the information I wanted, I called up my client and gave him the name of the firm. They used some sort of a liquid that remains a closed book to me. However, it did the work. I called up the head of the firm and asked him if it was really the common variety of fleas and he informed me they were called Texas sand fleas. So if any other veterinarian has a similar experience he can profit at my expense.

While with the Akron Health Department I had a similar experience, but these were the true variety of the *Pulex serraticeps*.

A FEATHER CYST IN A GANDER, DUE TO MISPLACED TISSUE*

By RALPH P. TITTSLER

Division of Bacteriology
The Pennsylvania State Experiment Station
State College, Pa.

The presence of a feather cyst in the abdominal cavity of a young gander is unusual and therefore is considered of sufficient importance to receive attention. It should be of particular interest to students of embryology.

FIG. 1. External view of cyst.

When a healthy Toulouse gander was dressed for holiday use a fatty growth, apparently a tumor, was found in the posterior region of the abdominal cavity. The bird was approximately 20 weeks old and weighed about 15 pounds. The owner sent only the growth to our laboratory for examination.

When the cyst was examined no possible points of attachment could be found. The owner stated: "The growth was localized

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in the posterior part of the abdomen buried in thick fatty tissue and seemingly disconnected. The only possible attachment would have been to the peritoneum. There were no vital organs near."

Figure 1 shows the cyst as it appeared before being opened. It weighed 120 grams; and since it was 85 by 40 by 25 millimeters in size, it was somewhat flattened and oval.

The wall or covering, because of its extremely oily nature and color, was mostly fat. It was considerably thicker at the ends than over the sides.

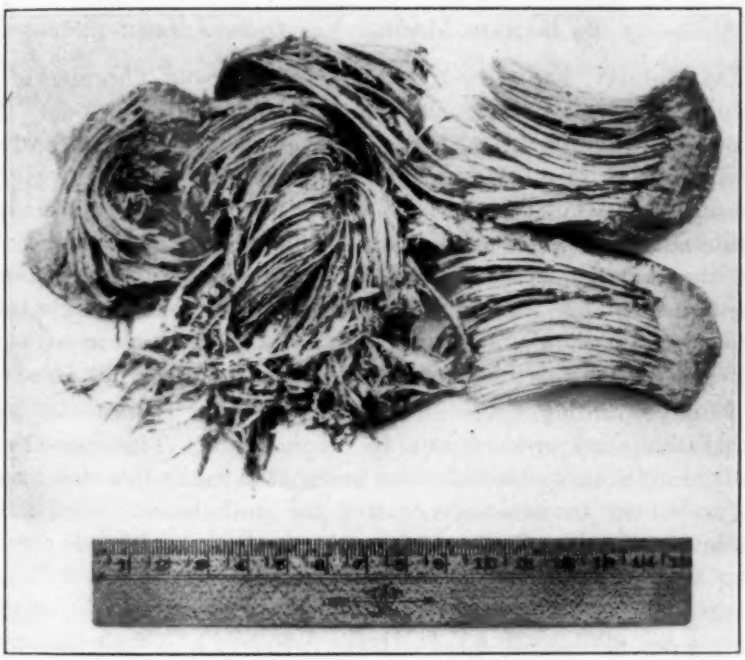

FIG. 2. Internal structure of cyst.

Figure 2 shows both the internal feathery structure and a cross-section of an end-wall. As can be noted, feathers were attached at both ends of the cyst. They overlapped in the central portion.

The photograph is rather misleading so far as the showing of feather development is concerned. A close examination of the feathers, after they were dried, showed that all were completely formed. Barbules could be seen with ease.

This cyst was misplaced embryonic tissue, since the epidermis

and its appendages, including the feathers, are produced from the ectoderm, while both the connective tissue and the peritoneum originate from the mesoderm. It is believed that a group of ectoderm tissue cells must have separated from the ectoderm layer and become lodged in the mesoderm during embryonic development. This mass of cells (perhaps very few) then developed after the bird was hatched and probably would have continued to increase in size had the gander not been killed.

"FANTOCHE"

By HAMLET MOORE, *New Orleans, La.*

On Monday, February 7, 1927, a nine-year-old Thoroughbred gelding, known as "Fantoche," raced a mile and a furlong. He was made favorite in a field of twelve horses and ran a rather disappointing race. He pulled up apparently sound, was given the usual treatment after the race and put away. The ordinary training course was continued until Thursday, when I was asked by his trainer, during the races in the afternoon, to go over and see him. I did so and found a case of tetanus thoroughly established. I put him under treatment, as I have done in at least 3500 cases in horses and mules, having treated fully that number.

Friday morning I visited the horse, found the disease had progressed, and ordered him to my hospital. This horse was walked a distance of about three miles, walking in this case being in preference to vanning or using the ambulance. The horse walked perfectly sound. Arriving at the hospital he was placed in a sling, and the usual treatment given.

Saturday morning trismus was complete. With me this symptom is not necessarily fatal. Horse perfectly quiet, without any convulsions or excitement at all. Trainer and friends in to see horse at about 11:30. Standing on all four. At 11:50, without anything happening, the horse leaned against a post and swelling of the right hip and thigh to twice normal size occurred in less than five minutes. Diagnosis: Previous fracture without displacement. Horse died in less than ten minutes. Carcass sent to rendering plant and held until Sunday forenoon. My request, however, had been to hold the right hind quarter, but, when I got there, I found the carcass intact. I had the right hind quarter dissected and found the femur shattered in at least ten pieces. I asked to have tissue and bone put into a sack and boiled out,

as I wanted to show same to the different owners and trainers at the race track.

My surprise was great enough at what I had seen, but the manager at the rendering plant called me Monday morning and informed me that the left hip was worse than the right and that he had put both the right and left hips into different sacks and boiled them out. The fractures were distinctly antemortem.

In the left hip there was no swelling, for when the horse went down in the sling he was dead in three minutes. I have seen probably 500 horses and mules die with tetanus, but never saw one die with as little struggle as this one, because he showed absolutely none. I have known this horse in actual racing at least five years and he has won close to one hundred thousand dollars in purses.

INTRAVENOUS INJECTIONS

By N. S. Mayo, *North Chicago, Ill.*

Remarkable progress is being made in the chemotherapeutic treatment of disease, both in human and veterinary practice. The majority of chemotherapeutic agents are administered intravenously and the following are some points in the technic of making intravenous injections that should be carefully considered.

If too large a quantity of fluid is injected into the circulation at one time, nausea is liable to occur. The solution should not be too concentrated, as many therapeutic agents are irritating. When the therapeutic agent is not incompatible, a normal saline solution should be used as a solvent. The solution is best administered if warmed to about body temperature and given slowly, to avoid shock. The gravity method is preferable to using pressure.

In making an intravenous injection the site should be shaved and rendered surgically clean. In large animals the jugular vein is generally preferred. The vein is raised and a sharp needle inserted quickly at an angle, pointing towards the heart. Blood should flow freely through the needle. The vein is then released and raised the second time. In some instances where a needle-point is just through the wall of the vein, the latter will slip off the needle when the vein retracts. If blood flows freely through the needle when the vein is raised the second time, it is certain that the needle is in the lumen of the vein.

By making the injection slowly, the solution is quickly diluted in the blood-stream and the patient can be observed properly. When swelling follows at the site of injection, it indicates that some of the solution entered the tissues outside of the vein. To avoid this after making the injection, disconnect the tubing and with the needle *in situ*, raise the vein and force blood through the needle, thus washing the solution out of the needle. Another and better way, whenever practicable, is to wash out the needle before it is withdrawn, using a little distilled water or normal saline solution.

Careful attention to details in intravenous therapy is important in obtaining the best results.

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POTTSVILLE, PNEUMONIA AND PATHOLOGY

Under date of March 12, the following press dispatch emanated from Pottsville, Pa., and was published widely. Pity the poor rodents.

> More than 250 rats and mice ran out of three business houses in Centre Street recently, and died on the pavements. Pneumonia, caused by gas, administered scientifically, caused them to rush into the open in search of fresh air.
>
> By the system introduced here pneumonia cultures are administered in gas which is dormant in food fed to the rodents. In two hours their lungs begin to dry up.

Perhaps the new system will be dubbed the "Pottsville Plan."

REVIEWS

LEHRBUCH DER ENTWICKLUNGSGESCHICHTE DER HAUSTIERE (Textbook of the Embryology of the Domesticated Animals). Vol. 1. Otto Zietzschmann, Professor of Veterinary Anatomy, University of Zurich. Richard Schoetz, Berlin, 1923.

This is a fairly concise textbook of the embryology of the domesticated animals. The subject is presented in a very orderly and clear manner. In the first volume (the only one submitted for reivew) there are 154 excellent illustrations.

H. J. S.

TIERARZTLICHE OPERATIONSLEHRE. Dr. H. Frick, Geh. Regierungsrat, o. Professor der Chirurgie und Operationslehre, Direktor der Chirurgischen Klinik der Tierarztlichen Hochschule zu Hannover. Funfte, verbesserte und vermehrte Auflage. x+443 pages, with 221 illustrations. Richard Schoetz, Berlin, 1923.

Only three years have passed since the publication of the fourth edition of this book; nevertheless, this, the fifth edition, has been revised to the extent of incorporating new ideas and facts from the recent literature. The increasing demand for operations on the smaller domestic animals (swine and dogs) has received due consideration in the revision and the operations of oöphorectomy, Cesarian section, and hysterectomy on these animals are described in detail. There is also a chapter on caponizing, an operation that has usually received little if any consideration in works on operative surgery. A number of the illustrations have been redrawn and appear in improved form. In other respects, the book maintains the characteristics which have made it a standard work on veterinary operative surgery.

L. A. K.

ATLAS DER ANATOMIE DES PFERDES (Atlas of the Anatomy of the Horse). Fourth and fifth editions. Reinhold Schmaltz, Professor of Anatomy, Veterinary College, Berlin. Richard Schoetz, Berlin, 1924. 16.50 M.

Volume I, the only volume at hand, deals with the skeleton. This is a fine piece of work. It contains 24 plates which show the bones of the horse from almost every angle. The different bones and their parts are labeled very plainly. Thus, no diffi-

culty will be encountered in associating the various parts with their respective names. Another excellent feature of this atlas is this: In front of most plates are pages of transparent wax paper on which appear outlines of the bones and their different parts and the names of ligaments, tendons, muscles and other structures that are attached or adjacent to them. Many of the plates are colored. The names used do not differ sufficiently from those employed in English texts to cause any difficulty.

The size of this volume is very convenient and, considered from all angles, the atlas should be of great value to instructors and students of anatomy.

H. J. S.

TIERARZTLICHE GEBURTSKUNDE, EIN PHYSIOLOGISCHES, PATHOLOGISCHES UND GEBURTSHILFLICHES REPETITORIUM FUR TIERARZTE UND STUDIERENDE. Dr. Med. Vet. Wilh. Wittmer. x+228 pages with 67 illustrations. Richard Schoetz, Berlin, 1925.

The author of this book is a veterinarian practicing in Hamburg, Germany. Realizing how convenient it often is to a busy practitioner to be able to obtain information on a specific point without reading an extensive discussion of the subject in the ordinary text-book or work of reference, he has collected from the literature, from his graduate studies, and from his experience in practice the important facts regarding reproduction and the diseases associated with it and presents them in this book in the form of brief notes arranged in logical sequence under appropriate headings. The first chapter, which is devoted to the physiology of pregnancy, contains tables showing when oestrum begins, its duration, and the intervals at which it recurs, the time required for pregnancy to reach full term, etc., and also information regarding the diagnosis of pregnancy and methods of examination together with the dietetics of the pregnant female. The physiology of parturition is the subject of the second chapter and in the succeeding chapters the pathology of pregnancy, the pathology of parturition, the conditions occurring during the puerperal period, and the diseases of the young receive attention. The book should serve as a convenient handbook to the practitioner.

L. A. K.

SPEZIELLE PATHOLOGISCHE ANATOMIE DER HAUSTIERE (Special Pathological Anatomy of Domesticated Animals). Ernst Joest. Vol. IV, 2nd Half. Richard Schoetz, Berlin, 1925.

This is indeed a monumental contribution to veterinary science. The book, when completed, will consist of at least five volumes of approximately 150 to 300 pages each. The text is clear and the numerous illustrations are excellent. No finer work has ever been published in the field of veterinary science or any other branch of science. The paper used is of the best quality, the type is for the most part large and the print is very distinct and easy to read. Volume IV, part 2, deals with the circulatory organs.

It is understood that Dr. Joest had intended to write this book himself. However, the war brought about conditions which made this impossible. He, therefore, sought the collaboration of nine eminent authorities in various fields of pathology and with their help this magnificent piece of work was well on its way toward completion at the time of his recent death.

H. J. S.

LEISTUNGEN AUF DEM GEBIETE DER VETERINAR-MEDIZIN (Work in the Field of Veterinary Medicine). W. Ellenberger, K. Neumann and O. Zietschmann. Julius Springer, Berlin, 1925.

In this publication the authors, assisted by about thirty collaborators from a number of European countries, Japan and Africa, attempt to present a complete review of veterinary literature published throughout the world each year.

The JOURNAL of the A. V. M. A. is the only veterinary publication from America listed among the journals reviewed.

The authors are anxious to make their review as complete as possible. They, therefore, request that those who have published articles in journals, other than those listed, send reprints to Prof. Ellenberger, Dresden -A, Schwitzerstr.

Editors of veterinary periodicals, especially foreign ones, from which no abstracts have been made, up to the present time, are asked to send sample copies to the publishing house of Julius Springer, Berlin W. 9, Linkstr. 23/24, or to Prof. Neumann, Berlin N. W. 6, Luisenstr. 56, in order that the periodicals concerned may be taken care of in the future.

Authors and publishers of original and important contributions in the field of veterinary medicine are asked to send the

titles of respective publications to Herrn Reg.-Vet.-Rat Dr. Ziegler, Dresden, so that they may be sure to be entered in the review and not be overlooked.

There is a complete index of authors and subjects.

No school or laboratory dealing with animal diseases can afford to be without this publication.

H. J. S.

ABSTRACTS

GLYCEMIE NORMAL CHEZ LES BOVIDES. GLYCEMIE ET MALADIE VITULAIRE CHEZ LES VACHES LAITIERES (Normal Glucose Content of the Blood in Bovines. Glycemia and Milk Fever in Milk Cows). G. Moussu and R. Moussu. Compt. Rend. Acad. Sci., cxxxii (1926), 7, pp. 431-433.

In speaking of glycemia or of hypoglycemia there is a tendency to refer to the glucose content of human blood.

A series of tests on cattle show that the glucose content of the blood in this species is always less than 1 in 1000. It is between 0.60 and 0.80 per 1000 (calculated by the method of Sanders, *Jour. Biol. Chem.*, lviii (1923), 2, pp. 1-15.)

		Glucose per 1000 parts blood
1.	Charolais work ox, 7 years old	0.601
2.	Charolais work ox, 5 years old	0.523
3.	Charolais work ox, 8 years old	0.474
4.	Flemish cow, 6 years old, pregnant, dry	0.710
5.	Brittany cow, 6 years old, pregnant, dry	0.500
6.	Normandy cow, 7 years old, pregnant, milking	0.795
7.	Comptoise cow, 5 years old, pregnant, milking	0.725
8.	Flemish cow, 6 years old, pregnant, milking	0.625
9.	Brittany cow, 5 years old, pregnant, dry	0.475
10.	Dutch cow, 10 years old, non-pregnant, milking	0.635
11.	Normandy cow, 6 years old, non-pregant, milking	0.650

The normal glucose content of healthy bovines is 0.616 per 1000.

Milk fever being a disease of the beginning of lactation, the hypothesis of a hypoglycemia has been submitted. A first *a priori* objection is that milk fever is one of the rare diseases of cattle in which glycosuria occurs. It is inconceivable to have glycosuria accompanying hypoglycemia. A second objection, of no less force, is that the course of milk fever decreases, or inhibits, the secretion of milk and thus puts an end to the utilization of glucose by the udder.

Experiments on cases of milk fever were made in order to study these objections.

	Glycemia	
	Before treatment	*After treatment and recovery*
1. Normandy cow, 8 years, affected 24 hours after parturition.....	0.535	0.875
2. Normandy cow, 10 years, affected the second day after parturition.	0.705	1.050
3. Normandy cow, 7 years, affected the second day.....	0.692	0.891
4. Normandy cow, 6 years, affected the second day after parturition.	0.575	0.785
5. Normandy cow, 6 years, affected 36 hours after parturition.....	0.625	0.925

The glucose content of the blood during the disease was found to average 0.646, which is not less than the amount found in normal animals. None of these results indicates hypoglycemia. Milk fever is not a hypoglycemia. Its etiology has another source.

The fact that the glucose content of the blood increases to 0.905 following insufflation and recovery can be explained by an undetermined excitation caused by the treatment, and especially by the sudden stopping of milk secretion and therefore of the utilization of glucose by the mammary gland.

The increase in glucose in the blood does not seem to be the only or the essential factor producing recovery. This is seen in the following experiments.

1. Normandy cow, 8 years old. Milk fever on the day of parturition, September, 1924. Subcutaneous injection of 30 grams of glucose. No change in symptoms for two hours. Insufflation of udder. The patient stands up within four hours. Complete recovery.
2. Normandy cow, 6 years old. Milk fever developed on the third day after parturition, December, 1924. Subcutaneous injection of 30 grams of glucose. No change during six hours. Insufflation of udder. Three hours later the cow is standing. Complete recovery.
3. Normandy cow, 8 years old. Milk fever developed on the third day, May, 1925. Intravenous injection of 20 grams of glucose. No change during 17 hours. Second injection (subcutaneous) of 40 grams of glucose. No amelioration; the animal is sacrificed.

Injections of glucose do not modify the course or termination of the disease.

Milk fever of heavy-milking females is therefore not a simple manifestation of hypoglycemia.

J. P. S.

Effect of Cod-Liver Oil on Thyroparathyroidectomized Dogs. J. H. Jones. Jour. Biol. Chem., lxx (1926), p. 647. Abst. in Jour. Amer. Med. Asso., lxxxviii (1927), 4, p. 277.

Jones avers that the daily administration of 20 cc of cod-liver oil for two weeks before operation prevented tetany, and greatly increased the length of life of thyroparathyroidectomized dogs.

However, 20 cc a day of the oil, if given only after the removal of the glands, was not effective in preventing tetany or in prolonging the life of the animals. The concentration of calcium in the blood of the treated animals fell as rapidly as that of the untreated animals; in fact, the lowest levels attained were in the blood of the treated dogs which lived the longest. These data indicate that some factor in addition to the low concentration of serum calcium plays a part in the production of the tetany which usually follows, within two or three days, the removal of the parathyroid glands. Similar results, but not as striking, were obtained by irradiating the dogs with ultraviolet rays before the removal of the glands.

Coccidiosis in Mammals. A. J. Andrews. Amer. Jour. Hyg., vi (1926), p. 784. Abst. in Jour. Amer. Med. Assoc., lxxxviii (1927), 4, p. 273.

The course of infection with coccidiosis in cats has been studied by Andrews. One attack of coccidiosis seems to render cats and dogs nonsusceptible to subsequent infection by the same organism. This immunity lasts for seven months, and probably for life. Regarding human infections with *Isospora*, it is the opinion of Andrews that the disease is caused by a coccidium specific to man, and that human coccidiosis may occur much more frequently than reports indicate.

Epidemic Encephalitis in Dogs. L. P. Pugh, Lancet, ii (1926), p. 950. Abst. in Jour. Amer. Med. Asso., lxxxviii (1927), 4, p. 280.

The epidemic analyzed by Pugh, including more than fifty fatal cases, was one of what veterinary medicine has long known as the nervous form of distemper. Its chief interest lies in the fact that the occurrence of a number of quite definite "lethargic" cases leads to a closer comparison than has hitherto been made between the human and canine disorders. It appears that both in symptomatology and in the character of the cerebral lesions the two diseases are almost identical. This similarity is so close that the conclusion to be reached is either that the two are the same disease in different animals, or, alternatively, that the lethargic and encephalitic symptoms are not in themselves entitled to rank as a "disease"—i. e., a morbid process associated with a single virus—but are merely a particular form of reaction to which more than one virus may give rise.

ARMY VETERINARY SERVICE

CHANGES RELATIVE TO VETERINARY OFFICERS

Regular Army

Major George H. Koon, V. C., is relieved from further assignment and duty as student, Command and General Staff School, Fort Leavenworth, Kansas, effective upon completion of his present course of instruction, and will then report in person to the commanding general, Fort Leavenworth, Kansas, for duty.

Captain Clifford C. Whitney is relieved from his present assignment and duty at the station hospital, Fort Sam Houston, Texas, and will proceed to Fort Robinson, Nebraska, and report in person to the commanding officer, Robinson quartermaster intermediate depot, for duty.

Captain Raymond Randall is relieved from his present assignment and duty at the Ninth Corps Area Laboratory, Letterman General Hospital, Presidio of San Francisco, California, effective on or about June 1, 1927, and will then proceed to Fort Sam Houston, Texas, for duty at the station hospital.

Captain George L. Caldwell is relieved from his present assignment and duty at Fort Riley, Kansas, effective on or about September 2, 1927, and will then report in person to the commandant, the Cavalry School, Fort Riley, for duty for the purpose of pursuing a course of instruction.

1st Lieutenant Ralph H. Lewis promoted to grade of captain, effective December 13, 1926.

The promotion of Lt. Colonel Robert Vans Agnew to grade of colonel is announced, effective December 18, 1926.

Captain Wm. H. Houston is relieved from assignment and duty at Reno Q. M. I. D., Fort Reno, Okla., and assigned to duty in the Hawaiian Department, sailing from San Francisco on the transport scheduled to leave that port on or about July 23, 1927.

Captain Jacob E. Behney is assigned to duty at Reno Q. M. I. D., Fort Reno, Okla., to take effect upon completion of his present tour of foreign service, and will join that station at the proper time, in accordance with orders to be issued by the commanding general, Hawaiian Department.

The promotion of Lt. Colonel Eugene J. Cramer to grade of Colonel is announced, effective January 8, 1927.

Colonel Eugene J. Cramer is relieved from assignment and duty at Seattle Q. M. I. D., Seattle, Wash., and assigned to duty at Fort Bliss, Texas, and to temporary duty at Vancouver Barracks, Wash., until July 5, 1927.

Reserve Corps

Promotions

France, Walker, P. O. Box 225, Vincennes, Ind., to Captain.

Whitlock, Raymond Francis, to Captain. Address Monett, Missouri.

Separations

Detwiler, Russell Stauffer, Captain—appointment terminated, not eligible for reappointment because of National Guard status.

Clayton, Charles Edward, Lt. Col., New York, N. Y. Honorably discharged February 18, 1927.

Ronsse, August Joseph, Captain, Turlock, Calif. Resigned, Feb. 19, 1927.

Thompson, Wm., Major, San Antonio, Texas. Transferred to Unassigned-Reserve, Feb. 25, 1927.

Changes of Address

Gregory, Roy Arnold, 2nd Lt., from North Carolina to Washington Grove, Maryland.

Ryson, Geo. Walter, 2nd Lt., from Oregon to Warren, Illinois.

New Acceptance

Wilson, John Thomas, 611 Boulder St., Pawnee, Oklahoma, Capt. Vet.-Res.

Paige, Russell Allen, 2nd Lieut., 546 Colorado Ave., Grand Junction, Colorado.

Frey, Jesse Jonathan, Major, R. No. 4, Box 4454, Sacramento, Calif.

BUREAU TRANSFERS

Dr. Carl F. Strochlein, from Toledo, Ohio, to Chicago, Ill., on meat inspection.

Dr. Wm. Jesse Smith, from Kansas City, Kans., to Chicago, Ill., on meat inspection.

Dr. Leo V. Hardy (St. Jos. '20), from Boise, Idaho, to Portland, Ore., on meat inspection.

Dr. Edward J. Drake (K. C. V. C. '06), from Lincoln, Nebr., to Seattle, Wash., on meat inspection.

Dr. William C. Herrold (O. S. U. '07), from Lincoln, Nebr., to Wichita, Kans., in charge of meat inspection.

Dr. Johnson R. Roche (Iowa '23), from Chicago, Ill., to Waterloo, Iowa, on meat inspection.

Dr. Dale B. Stewart (O. S. U. '10), from Waterloo, Iowa, to Iron River, Mich., in charge of meat inspection.

Dr. L. J. Allen (Ont. '95) has been put in charge of tick eradication, hog cholera control, etc., at Oklahoma City, Okla.

Dr. N. N. Hatcher, from Baton Rouge, La., to Jacksonville, Fla., on tick eradication.

Dr. D. B. Pellette (K. S. A. C. '12), from Baton Rouge, La., to Jacksonville, Fla., on tick eradication.

Dr. Charles M. Gates, from Des Moines, Iowa, to Chicago, Ill., on tuberculosis eradication.

Dr. Clyde S. Hess, from South St. Paul, Minn., to Huron, S. D., on meat inspection.

Dr. Cloyd M. Riley (McK. '09), from Portland, Ore., to Tacoma, Wash., on meat inspection.

Dr. Wilbur B. Stegner (McK. '18), from Lincoln, Nebr., to Omaha, Nebr., on virus-serum control.

Dr. H. E. Smith (O. S. U. '05), from the Pathological Division to Field Inspection Division, Washington, D. C.

Dr. M. E. Schwab (Cin. '16), from Sioux City, Iowa, to St. Paul, Minn., in charge virus-serum control.

Dr. Cleo L. Lash (K. C. V. C. '16), from Harrsiburg, Pa., to Wichita, Kans., on virus-serum control.

Dr. L. L. Denson, Jr. (A. P. I. '23), from Nashville, Tenn., to Jackson, Miss., on tick and tuberculosis eradication.

Dr. E. G. Pigman (K. C. V. C. '13), from Omaha, Nebr., to Sandpoint, Idaho, in charge of meat inspection.

Dr. Harry J. Hoyman (Chi. '04), from South St. Joseph, Mo., to Evansville, Ind., in charge meat inspection.

Dr. D. K. Williams (K. C. V. C. '17), from Chicago, Ill., to Evansville, Ind., on meat inspection.

Dr. Robert A. Moonan (Chi. '13), from Chicago, Ill., to New Haven, Conn., on meat inspection.

Dr. James L. Orr (A. P. I. '23), from Worcester, Mass., to Springfield, Mass., on meat inspection.

Dr. Patrick J. Creedon (Chi. '10), from Springfield, Mass., to Woorester, Mass., on meat inspection.

COMMUNICATIONS

HONOLULU IN 1928

To the Editor:

Referring to the questionnaire in the January Journal, "What did you do with yours?"

What did you expect *me* to do with an application blank? We now have a 100 per cent membership and of course can not use it, but I can keep it as a souvenir until some eligible prospect comes along, as that is one of the requirements of any veterinarian locating in the Territory.

"Lest you forget" I want to remind you that we are planning on holding the A. V. M. A. convention in Honolulu in 1928, and a big noise to that effect will be made at the Philadelphia meeting in September, 1927.

With best wishes for a prosperous year to the Association, I am

P. H. Browning.

Honolulu, Hawaii, Feb. 17, 1927.

BENEFITS THE PRACTITIONER

To the Editor:

The idea of publishing the proceedings of the U. S. Live Stock Sanitary Association in one number of the Journal is a good one and if the precedent becomes an annual occurrence it will play an important part in the education of the practitioner.

The papers and reports present a true story of the advancement of veterinary medicine in the last year, as well as outlining the present status of live stock sanitary control measures.

C. C. Hastings., *President,*
Illinois State Veterinary Medical Association.

Williamsville, Ill., March 12, 1927.

FAVORABLY IMPRESSED

To the Editor:

Even before reading the editorial in the current number of the Journal, but after having noted that the number contained a full report of the proceedings of the last meeting of the U. S. L. S. S. A., I was so favorably impressed that I resolved to write to compliment you, as Editor, and the Subcommittee on Journal

for this novel yet extremely distinctive departure in policy. Not only does it bring to the attention of all members of the Association some very helpful information that might never otherwise reach them, but also incorporates in the leading veterinary journal of the world certain important papers and reports.

F. B. HADLEY,
Professor of Veterinary Science,
University of Wisconsin.

Madison, Wis., March 10, 1927.

GOOD READING

TO THE EDITOR:

In the last issue of the JOURNAL, I notice the proceedings of the U. S. Live Stock Sanitary Association. This is very good reading to me, as I can not attend the meetings, but in this manner can keep posted as to what is going on in our profession. It is progress and I am glad to see Dr. Dyson, Dr. Mohler and yourself pushing it ahead.

G. H. BRUNS,
Veterinary Inspector,
Bureau of Animal Industry.

East St. Louis, Ill., March 10, 1927.

SPEAKING OF THERMOMETERS

The following was contributed by F. R. T., of North Carolina, and published in the "Tonics and Sedatives" column of the *Journal* of the American Medical Association recently:

A ministerial friend of mine who has several times crossed the Atlantic, tells the following anecdote. On one of his trips he made the acquaintance of a Dr. ——— who seemed to be a very charming fellow. He was talking with the doctor on deck when a very self-important officious fellow came up, and hearing my friend call the other man "Doctor," at once interrupted the conversation as follows:

"Oh, you're a doctor, are you?" Then, without giving any opportunity for reply, the self-important one continued. "I think I have a little fever. Let me have your clinical thermometer." The doctor at once handed him a clinical thermometer about a foot long, more or less. The intruder took his own temperature, and then returned the thermometer with the remark that his temperature was normal. Then he was moved to ask, "Isn't that a rather large thermometer?" "No," was the reply, "it is the usual size." "Why," returned the intruder, "my physician at home uses a much smaller one." "Oh, my dear sir," was the reply. "I am not a physician, I am a veterinarian." Still eager to monopolize the conversation, the intruder continued, "How do you keep the animals from breaking the glass when you put the thermometer in their mouths?" The V. M. D. calmly replied, "Oh, we don't take the temperature that way!" The intruder got the idea perfectly, and rushed to the rail. At that, he seems to have consulted the right man, who was able to cure him of his worst trouble!

MISCELLANEOUS

A VEST POCKET ESSAY ON SAXOPHONES

By I. K. ATHERTON, *College Park, Md.*

A saxaphone is an alleged musical instrument which looks as if its ambition to get somewhere had been rudely interrupted by a hack saw. It has almost as many finger-keys as a centipede has legs and they are used about as freely. If kept in its case it is as harmless and innocent-looking an affair as one would care to see. However, if hooked onto a leather-lunged enthusiast it will run the whole gamut of noises from a pig caught under a gate to a long-eared Missouri canary bird braying in a tin stable. The fellow who invented it had in mind an instrument partaking of the qualities of both a brass instrument and a clarinet. He succeeded all right, for the finished article not only combines the qualities of these instruments, but also the base drum, the cymbals, the laughing hyena and, in fact, the whole menagerie. The "sax" was originally intended for use in military bands, but when a cross-eyed world went delirious over jazz it was the only invention other than a hypodermic syringe that would produce the highest form of delirium, and thus it became the essential part of jazz orchestras. So far as we know, the inventor has never been apprehended and brought to justice. If some guy will only devise an efficient muffler for saxophones, he will receive the plaudits of those who have reached the age where their joints creak in protest when they endeavor to do the Charleston or Black Bottom.

If a saxophone could be invented that would simulate the Poo-oo-eg, Poo-oo-eg, Poo-oo-eg, Pi-i-ig, Pi-i-ig, P-i-ig of the hog-caller, it would make a great hit in the swine world. A pig lives to eat as surely as he eats to live, and anything that makes a noise like the mess call would become most popular with him. Because a hog possesses a voracious appetite he can be induced to eat most anything and "most anything" is too frequently considered good enough for hog feed. The natural channel of hog cholera infection is through the mouth, the same as typhoid fever in the human family. Last year over 90 per cent of the hog cholera losses in Maryland were due, directly or indirectly, to the feeding of infected pork in garbage, table scraps, kitchen

swill, slaughter-house or butcher-shop offal. Think of it, about 4,500 hogs, valued at approximately $65,000.00 were lost because of thoughtlessness or carelessless in regard to what was put in the hog's dinner pail. Now really, would there be anything wrong in, or could any harm come from, keeping infected pork out of hog feed?

RINDERPEST VACCINE DEVELOPED

In an article on the front page of the Manila *Daily Bulletin*, for February 3, 1927, the development of a new rinderpest vaccine was reported, the work having been done by Captain R. A. Kelser, Veterinary Corps, United States Army, who has been stationed in the Philippines for several years. Captain Kelser's experiments, which have resulted in the new vaccine, were conducted in the laboratories of the Bureau of Agriculture, with the cooperation of Dr. Stanton Youngberg, who was

CAPT. R. A. KELSER

appointed Director of the Bureau in November, 1926. A brief reference to this work was made in the article reporting the appointment of Dr. Youngberg, in the February, 1927, issue of the JOURNAL.

The work which Captain Kelser is reported to have brought to a successful conclusion was started a number of years ago by Dr. William H. Boynton, former pathologist of the Bureau of Agriculture. The vaccine developed by Dr. Boynton required several weeks for its preparation and the final product was found

to deteriorate rather rapidly. Captain Kelser turned his efforts toward shortening the length of time required to produce the vaccine and at the same time to improve the product so that it would retain its potency for a longer period than the vaccine developed by Dr. Boynton.

According to the newspaper article referred to, Captain Kelser has been able to reduce the time required for the preparation of the vaccine to approximately two days. Although the time limit of the potency of the new vaccine has not been definitely established, work done thus far indicates that it will retain its potency for a period considerably longer than the old vaccine.

Experiments are being conducted to test the effectiveness of the new vaccine. In a letter recently written by Governor General Wood to Major General Fred W. Sladen, commanding general of the Philippine department, United States Army, Captain Kelser was thanked for his work in developing a vaccine for rinderpest, which is expected to be of very great benefit to the cattle industry of the Philippines. Governor General Wood also wrote Captain Kelser a letter of thanks and praise. Plans are under way to prepare rinderpest vaccine along the lines recommended by Captain Kelser, including arrangements for its distribution by the Bureau of Agriculture and its practical use in the field.

In the same issue of the Manila *Daily Bulletin*, the following editorial, under the caption, "A Proof for Science," appeared in both English and Spanish:

> An illustration of what scientists can contribute to the development of the country is afforded by the work of Captain R. A. Kelser of the Medical Department Research Board of the United States Army in developing a new and improved vaccine for rinderpest. Captain Kelser has carried to a much higher degree of development the work started by Dr. William Boynton, another scientist, who formerly was connected with the Bureau of Agriculture here.
>
> Since Dr. Boynton's departure two or three years ago his scientific work to combat the disease which is the biggest enemy of the cattle industry of the islands had stood still. The Bureau of Agriculture had proceeded with the campaign against the disease, but was forced to use an unsatisfactory vaccine for the simple reason that it had no better one. It had no better one because there was no one available to develop it. Dr. Boynton had made a valuable contribution, but the task was not completed when he left.
>
> Captain Kelser, recognized for his work on vaccines, was procured for the task through the army because of the importance to the islands of the live stock industry. He worked without prominence attaching to what he was doing. What Captain Kelser has done in this assignment should be done in many others here. We do not mean a lot more vaccines should be developed necessarily, but that science should be applied to the needs of the country in many places.
>
> The field for scientific work here is enormous, yet relatively little of it is being done. Due effort is not made to get the scientists qualified for the tasks. As a result the development of the country is retarded proportionately. It will be retarded just so long as this condition continues.

NORDEN LABORATORIES INCORPORATED

Announcement is being made that the Norden Laboratories, of Lincoln, Nebr., have been completely reorganized and incorporated. For the past seven years, the Norden Laboratories have been a strictly jobbing concern, handling several well-known lines of veterinary biological and pharmaceutical products in addition to a few products of their own.

The Norden Laboratories, during the time that they have been in business, have confined their sales to graduate veterinarians. It is announced that this policy will be continued 100 per cent on all of their products, or any that they may handle.

Dr. Carl J. Norden (K. C. V. C. '11), of Lincoln, Nebr., president of the Missouri Valley Veterinary Association, will be at the head of the new organization and he will have associated with him several veterinarians well known to the profession throughout the Central West.

Dr. Frank Breed (Corn. '13), who was with the Lederle Laboratories for four years and for the past ten years in charge of the Biological Department of the Jensen-Salsbery Laboratories, of Kansas City, is secretary-treasurer of the new organization and is in charge of the biological laboratories.

Dr. Lester R. Smith (K. C. V. C. '10) will have charge of the Sioux City branch of the company. Dr. Smith was in practice for several years following graduation and has had previous experience in commercial activities. He spent a number of years in the Army and has been active in the organized reserve, now holding a commission as lieutenant colonel.

The Norden Laboratories henceforth will produce their own line of bacterins and pharmaceuticals, have their own Certified Brand of anti-hog cholera serum, and will be equipped to render a complete diagnostic laboratory service. Branches for the convenient distribution of their products will be maintained at Sioux City, Iowa, Norfolk, Grand Island, and Superior, Nebraska, and at Wichita, Kansas.

WOMEN'S AUXILIARY

A dollar and a half will make your wife, mother, sister or daughter a member of the Women's Auxiliary to the A. V. M. A. A dollar a year thereafter will keep her a member. How about it? Send check to Mrs. S. E. Hershey, Secretary, 1109 Washington St., Charleston, W. Va.

ASSOCIATION MEETINGS

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION

The forty-fourth annual meeting of the Illinois State Veterinary Medical Association was held in Chicago, at the Lexington Hotel, November 29-30, 1926.

The meeting was called to order by President Roy E. Kluck, of Freeport, who, after the reading and approval of the minutes of the previous meeting, delivered the President's annual address. Some of the important points of Dr. Kluck's message were the following:

1. Veterinarians should be exempt from jury service. It seems that at the time when the age limit of jurymen was raised from fifty to sixty years, the veterinarian failed to be mentioned.
2. The pay of Assistant State Veterinarians should be raised. (This has been accomplished, the amount having been raised from $8.00 per diem to $10.00.)
3. We should direct our efforts towards securing milk and meat inspection for all cities and municipalities regardless of size.
4. Attendance at our sessions should be restricted entirely to veterinarians. (The by-laws were amended at this meeting, so as to accomplish this purpose.)
5. We should direct our efforts towards securing legislation that will restrict the use of biologics containing living organisms to those qualified to administer them.
6. The recent serum famine and its consequent effect upon the profession was commented upon.

The report of the Secretary-Treasurer showed receipts for the year of $781.22, with disbursements totaling $459.57, leaving a balance on hand of $321.65.

The report of the Policy Committee was presented by the chairman, Dr. J. S. Koen. The Committee reported a conference with the Extension Department of the University of Illinois, at which the undue activities of some county agents in attempting to render veterinary service were discussed. The University representatives assured the Committee that their institution did not approve of such activities, but recognized the importance of competent veterinary service and gave it as their opinion that this service should be developed rather than destroyed. The report also covered the efforts of the Committee to secure for accredited practitioners of Illinois the same recognition that was accorded accredited practitioners in other states. Attention was directed to the desirability of extending municipal meat and milk inspection in those cities not already having this service.

The Committee on Prosecutions presented a report in which it was brought out that much of the effectiveness of the Veterinary Practice Act was in the hands of the county prosecuting attorney and that many times it was almost impossible to secure any action upon his part, although there were cases when this official could be forced into action. The report pointed out the desirability of prosecuting salesmen of mineral mixtures who administer worm remedies.

Too frequently politics operate to the disadvantage of our profession. Dr. Laird related an incident at Springfield, where an appropriation had been made for municipal milk and meat inspection. The Health Department asked him to furnish the names of graduate veterinarians who would be eligible to fill this position. Dr. Laird furnished the names of five veterinarians, but the Farm Bureau insisted that the appointee be a practical dairyman and, through the influence of the dairymen and farmers, the appointment of a layman was made by the Board of Health.

The afternoon session opened with a lecture and questionnaire on horse practice, in charge of Dr. R. E. Nesbitt, of Clinton. The horse situation appears more hopeful. More mares are being bred and more colts were castrated the past year than for some time. Dr. Stringer pointed out that that it is an opportune time to eliminate the grade stallion and that the stallion law should be revised. Dr. Nesbitt exhibited a specimen of *Filaria oculi*. He stated that this parasite is quite common in his locality and he believes that it is frequently the cause of orchitis. Considerable time was given to the discussion of ringworm and treatment for it. Dr. Quitman recommended mercurial ointment 50 per cent for the treatment of this disease in all animals.

The lecture and questionnaire on swine practice was in charge of Drs. Morin and Hastings, who reviewed the recent ravages of hog cholera and complications. This discussion was the liveliest of the meeting and was participated in by Drs. McDonald, Kinsley, Reardon, Quitman, F. E. Brown, Mayo and Koen.

The lecture and questionnaire on small animal practice was turned over to Dr. J. V. Lacroix, owing to the impossibility of Dr. F. R. Whipple to be present on account of illness. Most of the time was given over to answering questions and this feature proved to be an unusually instructive part of the program. Among the topics discussed were running fits in dogs, anthelmintics for cats, the use of sero-toxylin as an immunizing agent for distemper, treatment for chorea, prenatal parasitic infestations,

and many others. This part of the program was concluded with a paper on rabies by Dr. John G. Blum, of Normal.

The lecture and questionnaire on veterinary medicine was in charge of Dr. E. L. Quitman. A recently published article on the injection of potassium iodid in cases of actinomycosis and botryomycosis was discussed. Dr. Quitman gave it as his opinion that oral administration of this drug is preferable. His treatment of anal fissures and fistulous tracts in dogs with a 7 per cent solution of mercurochrome, with injections at three-day intervals, was said to be very satisfactory. In a discussion of local anesthetics, it appeared to be the consensus of opinion that all cocain substitutes have their shortcomings.

The morning session of the second day was called to order by President Kluck at 10:00 a. m. He introduced Dr. T. A. Sigler, of Greencastle, Ind., president of the A. V. M. A., who spoke encouragingly concerning the outlook for the horse situation. Notwithstanding the marked decrease in horse practice, the country practitioner depends for his standing in the community on his ability to take care of this branch of practice properly, according to Dr. Sigler. The automobile has also hurt the cattle industry to some extent. Dr. Sigler emphasized the importance of veterinarians maintaining their membership in their state association, as well as the American Veterinary Medical Association, so that veterinarians could work together for their mutual welfare.

The lecture and questionnaire on sheep practice was in charge of Dr. W. B. Craig, of Indianapolis, Ind. Dr. R. J. Hinkle, of Decatur, read a very interesting and instructive paper, entitled, "Coccidiosis in Goats." Dr. Craig stated that sheep practice was fast becoming a branch of veterinary practice and that veterinarians must thoroughly qualify in it or quit defaming the county agent. The sheep industry is becoming more important as time goes on and offers great opportunities for the veterinarian to display his usefulness. It is necessary for veterinarians to familiarize themselves with sheep husbandry and be able to answer rational questions pertaining to this. Among the diseases and conditions mentioned by Dr. Craig were feeding, handling breeding ewes, internal parasites, scabies, ticks, lice, etc. Dr. Craig described the copper sulphate treatment for stomach worms. He gave it as his opinion that the drenching of sheep should be done by the veterinarian and the owner never allowed to give this treatment.

The time allotted for this part of the program was not sufficient for completing it. Accordingly arrangements were made for Dr. Craig to hold an extra session after the convention had adjourned. The intense interest in the subject of sheep diseases was manifest by the fact that thirty veterinarians stayed over to attend this extra session. Dr. Craig conducted a round-table discussion which undoubtedly was one of the outstanding features of the meeting and it was with considerable reluctance that the meeting was adjourned at 11:00 p. m.

Dr. Adolph Eichhorn was called upon to explain the new hypoglycemic theory of the etiology of milk fever. Dr. F. A. Laird addressed the session on topics of current interest to veterinarians.

The afternoon session was opened with a lecture and questionnaire on poultry practice conducted by Dr. J. R. Christian, of Woodhull. Considerable time was given to the discussion of the pullorin test and coccidiosis. Dr. H. R. Hornbaker, County Veterinarian of Knox County, where the first work was done in area eradication of tuberculosis of poultry, gave a detailed account of the test records and results obtained.

The literary part of the program was concluded with a lecture and questionnaire on veterinary surgery, with Dr. L. A. Merillat in charge. Some of the instructive subjects included under this head were the glucose theory relative to the cause of milk fever, gland transplantations, herniated pigs, cryptorchidism in pigs, caudal injections of procaine, intravenous injection of the flavines and mercurochrome in septicemias, etc.

At the concluding business session, seven veterinarians were elected members of the Association.

An important change in the by-laws was made, marking Illinois as the first state association to follow in the wake of our sister professions, medicine and dentistry, in excluding from attendance at our business sessions all those except members of the profession and others invited by special action of the Association. The visiting veterinarians from other states may rest assured of the same hearty welcome to our meetings that has been accorded in the past, but county agents and salesmen of mineral mixtures and other nostrums, who have been using the Association meetings as a source of information for their own personal aggrandizement, must now secure this elsewhere. Admission to the various sessions shall be by card, showing that dues for the current year have been paid. Visitors shall be admitted only by showing a badge issued by the Secretary.

The following resolution was adopted:

WHEREAS, The United States Live Stock Sanitary Association, through its efforts to assist in the control of animal diseases for the protection of the live stock industry, has adopted as its policy that the distribution of all viruses, vaccines and biological products used as diagnostic or control agents should be restricted to competent veterinarians, therefore, be it

Resolved, That the Illinois State Veterinary Medical Association approve this policy and pledge its support to its application in our State.

A motion prevailed that the Association contribute the sum of $50.00 to the Schmidt Memorial Fund being raised by the A. V. M. A.

Election of officers for the ensuing year resulted as follows: President, Dr. C. C. Hastings, Williamsville; vice-president, Dr. F. A. Laird, Springfield; Executive Board: (District No. 1) Dr. W. B. Lane, Aurora; (No. 2) Dr. Roy E. Kluck, Freeport; (No. 3) Dr. F. R. Whipple, Peoria; (No. 4) Dr. J. G. Blum, Normal; (No. 5) Dr. A. E. Dickerson, Springfield; (No. 6) Dr. L. B. Michael, Collinsville; (No. 7) Dr. Robert Rives, East St. Louis.

A motion prevailed to leave the selection of the place of the next meeting to the officers of the Association. Dr. Hastings was then installed as President, after which the meeting adjourned

W. H. WELCH, *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The regular monthly meeting of the Veterinary Medical Association of New York City was held at the Academy of Medicine, 5th Ave. and 103rd St., New York City, Wednesday evening, December 1, 1926, at 8:30 p. m.

Professor Edward Lodholz, of the University of Pennsylvania, addressed the meeting on "Peculiarities of the Sexual Instinct and Its Abnormalities." A rising vote of thanks was extended to Professor Lodholz for his most interesting lecture.

The following officers were elected for 1927: President, Dr. C. G. Rohrer; vice-president, Dr. O. E. McKim; secretary-treasurer, Dr. C. P. Zepp; censors, Drs. Louis Corwin, R. W. Gannett, J. H. Harden, S. H. Shindel and Henry Amling.

Dr. John E. Crawford, of Far Rockaway, was elected to membership.

The Secretary-Treasurer's report was read, approved and accepted. There being no further business, the meeting adjourned.

C. P. ZEPP, *Secretary.*

LONG ISLAND VETERINARY MEDICAL ASSOCIATION

The Long Island Veterinary Medical Association has recently been organized. The charter meeting was held on December 2, 1926, at the Cortland House, Bay Shore, L. I. The following officers were elected at this meeting: President, Dr. E. J. Robbins, Bay Shore; vice-president, Dr. E. B. Ackerman, Huntington; secretary, Dr. J. M. Hendrickson, Farmingdale; treasurer, Dr. Chas. S. Chase, Bay Shore.

The meetings are held once a month in the different towns on the Island. The business meeting and reading of papers are held in the afternoon and are followed by a dinner and general get-together social meeting. This is promoting a feeling of good will and fellowship among the veterinarians on Long Island.

In addition, the Association as a whole is taking a course in avian pathology at the Poultry Disease Laboratory, established at the State Institute of Applied Agriculture, Farmingdale, L. I., by the New York State Veterinary College at Cornell University. The course is given every other Thursday. One lecture is given in combination with the regular monthly meeting of the Association and the other is held at the Poultry Disease Laboratory, where practical demonstrations and lectures are combined. This brings the veterinarians together twice each month.

J. M. HENDRICKSON, *Secretary.*

NEBRASKA STATE VETERINARY MEDICAL ASSOCIATION

The twenty-ninth annual meeting of the Nebraska State Veterinary Medical Association was held at the Hotel Yancey, Grand Island, December 14-15, 1926. A very interesting and profitable program was presented.

The first day opened with an address of welcome by the mayor of Grand Island, Hon. M. Jenkins. Dr. F. R. Woodring, of Lincoln, responded. The feature paper of this session was presented by Dr. R. R. Dykstra, dean of the Division of Veterinary Medicine, Kansas State Agricultural College. His subject was "Veterinary Pointers of Practical Value." In this paper, Dr. Dykstra brought out the most important subjects that were discussed at the various meetings he attended during the year.

First on the afternoon session was a paper by Dr. C. H. Hays, chief of the Nebraska Bureau of Animal Industry. His subject

was "State Problems." The rest of the afternoon session was devoted to a round-table discussion on "General Practice." To lead this discussion, interesting papers were presented by Dr. D. W. Hurst, of Tecumseh, on "The Business Side of a Country Practice," and "Subacute Obstruction of the Horse," by Dr. P. L. Cady, of Arlington.

The annual banquet was held on Tuesday evening. A very enjoyable time was had by all present, numbering one hundred and eighty-odd people. Dr. L. Van Es was toastmaster and the speakers were Hon. John McLellan, of Grand Island; Dr. E. C. Jones, of Grand Island and Dr. R. R. Dykstra, of Manhattan, Kans. After the banquet, dancing entertained the members and their friends until the wee small hours.

Wednesday morning the convention heard a very interesting paper presented by Dr. A. H. Francis, of Lincoln. His subject was "Recent Experiences with Hog Cholera." A very lively discussion followed. Dr. L. Van Es gave a very interesting talk on "Tuberculosis and Bacillary White Diarrhea." The pullorin method had a little in its favor in a particular group of positive and negative subjects, tested by the pullorin and agglutination methods. That is to say, all birds showing positive reactions to both tests showed lesions on postmortem, while one bird positive to the pullorin and negative to the agglutination test showed marked lesions on postmortem.

The Association elected the following officers for the ensuing year: President, Dr. H. A. Simon, Coleridge; vice-president, Dr. E. C. Jones, Grand Island; secretary-treasurer, Dr. Geo. A. Young, Syracuse.

The 1927 meeting will be held at Lincoln, December 13-14.

GEO. A. YOUNG, *Secretary.*

NEVADA STATE VETERINARY ASSOCIATION

The annual meeting of the Nevada State Veterinary Association was held at the University of Nevada, Reno, January 3, 1927. Eleven members and several visitors were in attendance. During the afternoon the following literary program was presented:

Report on the 1926 meeting of the American Veterinary Medical Association, by Dr. Geo. E. Bamberger.

Report on the 1926 meeting of the U. S. Live Stock Sanitary Association, by Dr. L. C. Butterfield.

"The Value of Constitution and Natural Vigor," by Dr. F. W. Wilson, Professor of Animal Husbandry, University of Nevada.

The following case reports were presented:

"Demodectic Mange of Cattle," by Dr. W. H. Hilts.
"Industrial Waste Poisoning of Sheep," by Dr. Robert Dill.
"Parotitis of Cattle," by Dr. F. H. Baker.
"Uncomplicated Equine Influenza," by Dr. Geo. E. Bamberger.
"Spasm of the Larynx of Cattle," by Dr. G. T. Woodward.

In the evening the annual association dinner was held, followed by an address by Director S. B. Doten, of the Nevada Agricultural Experiment Station, on "The Work of the Agricultural Experiment Stations."

Dr. W. C. Dye, of Reno, was elected president; Dr. W. B. Earl, vice-president and Dr. Edward Records, Reno, secretary-treasurer.

EDWARD RECORDS, *Secretary.*

UNIVERSITY OF PENNSYLVANIA CONFERENCE OF VETERINARIANS

The Conference of Veterinarians held at the University of Pennsylvania School of Veterinary Medicine, January 4-5, 1927, was the best attended of any conference in the history of these annual meetings. There was also an unusual amount of interest in the program, as indicated by the constant attendance and close attention of those present.

The meeting was called to order promptly at ten o'clock on the morning of the first day. Dr. Wm. J. Lentz, Director of the Small Animal Clinic, had several very interesting cases, which occupied the first part of the morning.

Dr. Wm. J. Lee, of the Veterinary School, presented a paper entitled, "The Roaring Operation as Perfected by Dr. Adams." He also made a report on a case of torsion of the uterus in a cow. Dr. Victor G. Kimball, of the Veterinary School, then reported a case of tuberculosis in a horse, and a case of ringworm in a donkey.

The afternoon session was called to order by Dean Klein, promptly at two o'clock. The first thing on the program was the presentation to the University, on behalf of the students, of a very fine portrait of the late Dr. John W. Adams, by Mr. Millar, a member of the junior class. The portrait was accepted by Dr. Josiah H. Penniman, Provost of the University, with appropriate remarks.

Dr. J. H. Jones, of the Department of Chemistry of the Medical School, then gave a very interesting illustrated lecture on "Feeding for Vitamins." After the discussion, Dr. M. F

Barnes and Dr. A. L. Brueckner, of the Pennsylvania Bureau of Animal Industry, presented a paper on "Infectious Abortion Control."

The meeting was then adjourned until 8:00 p.m., when it was called to order by Dr. B. M. Underhill. The first paper was presented by Dr. W. E. Cotton, of the U. S. Bureau of Animal Industry, on "Vesicular Stomatitis." This subject was ably discussed by Dr. J. H. McNeil, State Veterinarian of New Jersey.

Dr. E. T. Hallman, of the Michigan State College, presented the final paper of the day entitled, "The Gross Pathology of the Fetal Membranes of the Cow as an Index to Prognosis and Treatment." This paper, like all the others, was very interesting. After a lengthy discussion the meeting adjourned.

The second day of the conference was called to order promptly at 9:30 a.m. by the chairman, Dr. C. J. Marshall. This meeting consisted of a series of demonstrations, all of which were very interesting and instructive. The first three demonstrations were made by senior students as follows:

Udder and Teat Operations—Mr. S. Moore.
Periods of Pregnancy in the Cow—Mr. A. S. Vansant.
Symptomatology of the Ovary—Mr. L. A. Peterson.

Dr. Robert O. Blitz, of the Pennsylvania Bureau of Animal Industry, next gave a demonstration of the method of injecting an anthelmintic directly into the gizzard of a chicken. This was followed by a demonstration of "Bleeding Poultry for the White Diarrhea Test," by Dr. Harry W. Herriott, of the Pennsylvania Bureau of Animal Industry.

The last demonstration was made by Dr. R. S. Amadon, of the Veterinary School. He demonstrated and compared the motility of the stomach of the ox with that of the horse. This demonstration was of great interest to all who were fortunate enough to be present.

The final session was called to order by Dr. V. G. Kimball. The first paper, entitled "The Care and Treatment of Ducks," was presented by Dr. J. M. Hendrickson, of the Poultry Diseases Laboratory, Farmingdale, L. I. This was an interesting paper, telling how ducks are produced in an economical way by thousands. Some of the most common disease problems were also discussed.

The last, but by no means least, on the program was an interesting discussion of the "Relation of Avian Tuberculosis to the Tuberculosis-Control Problem," by Dr. A. F. Schalk, of the

North Dakota Agricultural College. He gave a very complete review of the tuberculosis problem and discussed the experimental work done on avian tuberculosis at the North Dakota Experiment Station. At the conclusion of the discussion the meeting adjourned.

G. A. Dick.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION

The thirtieth annual meeting of the Minnesota State Veterinary Medical Association was held in Minneapolis, January 13-14, 1927. The meeting was called to order at the Radisson Hotel by the President, Dr. W. C. Prouse, of Minneapolis. First in order of business was the President's address. Dr. Prouse read a most instructive paper on the changes in his practice during the last twenty years. Dr. Prouse came to the Northwest as an assistant to Dr. C. E. Cotton, at the time when horse practice was the major part of his work. At the present time, dogs and cats fill a large part of the place originally held by horses.

The Secretary reported that there were 222 active members and eleven honorary members, and the Treasurer stated that there was a very comfortable balance in the treasury.

The report of the Committee on Infectious Diseases was presented by Dr. C. E. Cotton. That of Bacteriology was given by Dr. C. F. Schlotthauer, of Rochester; Surgery, by Dr. N. A. Runquist, of Annandale; Medicine, by Dr. G. Van Duzee, of Lamberton; Legislation, by Dr. L. S. Englerth, of Royalton; Stallion Registration, by Dr. A. F. Lees, of Red Wing and on Veterinary Practice and Ethics, by Dr. R. L. West, of Waseca. Dr. M. H. Reynolds presented a very extended and interesting report on veterinary colleges. Dr. Reynolds took up the trend of education in other professions for the past few years, and pointed out some very interesting comparisons.

The following were elected officers of the Association for the present year: President, Dr. Wm. McLaughlin, Rush City; 1st vice-president, Dr. A. J. Thompson, Hutchinson; 2nd vice-president, Dr. Harry Evenson, Sacred Heart; secretary-treasurer, Dr. C. P. Fitch, University Farm, St. Paul.

Dr. C. A. Nelson, of Brainerd, presented an interesting discussion on the practice of veterinary medicine in Europe. Dr. Nelson visited the Scandinavian countries the past summer. Dr. J. N. Campbell, of Truman, presented a most unusual paper

on the business side of a country practice. Dr. Campbell used lantern-slides to illustrate how he keeps his books and how his business is divided. This paper was most favorably received by the profession, and many questions came up in respect to it. In the evening Mr. Victor E. Anderson, Assistant Attorney General, of St. Paul, presented a very interesting discussion on the legal phases of animal disease control work in Minnesota. Dr. T. P. White, of the Division of Hog Cholera Control, Bureau of Animal Industry, and Dr. J. W. Benner, of Cornell University, read papers in connection with hog cholera. A very interesting and instructive discussion ensued. The attendance at this meeting was the largest which this Association has ever had. There were 248 present.

On Friday morning, Dr. C. A. Sotaaen, of Windom, presented a discussion on "My Idea of a Real Up-to-Date Veterinarian." Dr. C. F. Schlotthauer and Dr. J. G. Hardenbergh, of the Mayo Foundation, at Rochester, gave a paper on bovine mastitis. Dr. Schlotthauer stated that he did not find that there was any specific treatment for this condition. He presented the results of bacteriologic work indicating that colon bacilli had a prominent part in the causation of this disturbance. This paper will be printed in full in the *Journal of Infectious Diseases*. Dr. R. L. West, of Waseca, presented a paper on sweet-clover poisoning. This elicited considerable discussion, as diseases in live stock produced by feeding sweet clover are becoming more and more common in the Northwest.

In the afternoon, Dr. H. C. H. Kernkamp, of University Farm, and Dr. D. B. Palmer, of Minneapolis, presented a discussion on veterinary practice in 1675. This paper was based on a book which is owned by Dr. Palmer, written at this early date. Certain of the practices seem very queer to us at this time, but on the whole it was astonishing the amount of knowledge that was possessed by the men attempting to practice veterinary medicine at that time. Dr. A. F. Lees, of Red Wing, gave a most interesting talk on his experience in the castration of cryptorchids.

Dr. L. E. Jenkins, of the State Live Stock Sanitary Board, presented a discussion on his experience in testing poultry for avian tuberculosis. Dr. Jenkins has recently been designated to take up this work in counties that are on the tuberculosis-free accredited list. He has found a large number of reacting birds in the counties in which he has worked. The last paper was

presented by Dr. W. L. Boyd, of University Farm, on pyelonephritis in cattle. This disease is becoming more and more common. Dr. Boyd has made a very careful study of the condition and presented it in a very interesting manner. Some veterinarians had never encountered this condition. Many had seen it but failed to recognize it. A very interesting discussion followed.

The following resolution was adopted by the Association, on the death of Dr. John W. Adams:

WHEREAS, Divine Providence has removed from this life our friend and practitioner, Doctor John W. Adams, of Philadelphia, and

WHEREAS, Doctor Adams spent many years of his life and obtained nearly all of his education in Minnesota, and

WHEREAS, Doctor Adams was recognized far and wide as one of the outstanding men of our profession and noted for his wonderful personality and ability as a teacher, loved by everyone for his sterling qualities as a citizen, and for his honesty and integrity, be it

Resolved, That we extend to his wife and family our sincere sympathy, that a copy of these resolutions be spread upon the minutes of our Association, and a copy sent to his wife and family and to the veterinary journals.

A motion was made and unanimously passed by the Association, inviting the A. V. M. A. to Minneapolis for 1928. Before this motion was voted, a very interesting discussion ensued, and it was the unanimous opinion of all present that every effort should be made to secure the 1928 convention. Minneapolis makes an ideal meeting-place at the time of the year when the Association usually convenes, and the A. V. M. A. has not met in Minneapolis for twenty-five years. Every effort will be made by the profession to secure the A. V. M. A. meeting for 1928.

C. P. FITCH, *Secretary*.

NINETEENTH ANNUAL CONFERENCE FOR VETERINARIANS AT CORNELL UNIVERSITY

The nineteenth annual conference for veterinarians was held at the New York State Veterinary College at Cornell University, Ithaca, N. Y., January 13-15, 1927.

The opening session was presided over by Dr. G. S. Hopkins. Dr. V. A. Moore opened the program with a few remarks. He emphasized the extension of new scientific facts into the practice of veterinary medicine as the prime purpose of the conference. Dr. Hopkins then introduced Professor F. L. Fairbanks, of the College of Agriculture.

Professor Fairbanks talked on "Dairy Stable Ventilation." The talk was illustrated by four models of dairy stables to demon-

strate different methods of stable ventilation. As a result of study of stables in actual use, there is set forth a new system of ventilation, which is called the Fairbanks-Goodman system. Details of the system are shortly to be published by the College of Agriculture and should be in the hands of every veterinarian interested in dairy sanitation.

Dr. P. A. Fish then gave a paper on "The Physiology of Milk Fever." Dr. Fish discussed the Widmark theory as to the cause of milk fever, giving special attention to the application of the glucose treatment in the condition. He emphasized the need of further research along these lines. He indicated that milk fever is not unlike the exhaustion of shock and the defective tissue oxidation, causing a reduction of carbon dioxid and oxygen pressure, with a lessened heat-production and subnormal temperature. An interesting part of the paper by Dr. Fish was the chart showing the relation of glucose and lactose in the blood-stream in pre- and post-inflation readings. The pre-inflation reading was glucose and was not a hypoglycemia. The post-inflation readings indicated the absorption of lactose from the udder with a little rise in the glucose. Such curves are not in accord with the theory of Professor Widmark, of a glucose deficiency, for the pre-inflation curve does not indicate the lack of, neither does the post-inflation curve indicate a great rise, in glucose, but they do show that the rise is due, in part, to lactose. The physiological factors governing the cause and cure of milk fever are under further investigation.

Dr. F. D. Holford, of the staff of the Borden's Farm Products Co., talked on "The Veterinarian and Sanitary Supervision of Market Milk Production." A general discussion was carried on at the end of the talk by several men in this field of work.

Dr. W. A. Hagan presided at the afternoon session. He first introduced Dr. J. M. Hendrickson, who gave a talk on poultry disease investigations on Long Island. Dr. Hendrickson is stationed at Farmingdale, as a member of the staff of the N. Y. State Veterinary College at Cornell. Dr. E. L. Stubbs, of the Pennsylvania Bureau of Animal Industry, discussed the control of coccidiosis and tapeworms in poultry.

Dr. Frank H. Miller read a paper dealing with the feeding of small animals during sickness. Dr. H. J. Milks and Dr. H. C. Stephenson helped complete a very fine small-animal program. Dr. Milks talked on vomiting in dogs and Dr. Stephenson discussed otorrhea.

The evening session was held in the amphitheatre, James Law Hall. Dr. Moore was the presiding officer. Dr. Livingstone Farrand gave the address of welcome on behalf of the University. In the absence of Dr. C. D. Pearce, the portrait of Dr. G. S. Hopkins was presented by Dr. F. W. Andrews. Dr. Farrand accepted the portrait for the University. Dr. Hopkins was called upon to speak and expressed his appreciation of the portrait and paid tribute to the work of the Alumni Association of the College.

Dr. T. A. Sigler, president of the American Veterinary Medical Association, was present and gave an address. His presentation of recommendations for the improvement of the profession of veterinary medicine was received with interest and enthusiasm. The meeting was followed by a smoker.

The morning session on January 14 was presided over by Dr. P. A. Fish. Drs. W. A. Hagan and A. Zeissig talked of experimental bracken poisoning of cattle. Dr. Chas. Linch, of the State Department of Farms and Markets, discussed the testing of accredited herds by practitioners. Dr. C. M. Carpenter indicated the presence of *Brucella abortus* in milk of cows with negative agglutination test. Dr. R. R. Birch gave some suggestions regarding the handling of the Bang abortion disease.

Dr. A. F. Schalk, of the North Dakota Agricultural College, gave two talks during the conference. On the morning of the first day he discussed "Some Phases of Rumeno-Reticular Digestion in the Ox." On the morning of the second day he talked on "Cattle Diseases Resulting from Eating Damaged or Spoiled Sweet Clover Hay or Silage." Both of these discussions were of great interest and imparted valuable information.

Dr. H. J. Milks presided at the afternoon session. Dr. D. H. Udall and Dr. J. N. Frost furnished the program at this session. Dr. Udall gave a practical talk and explanation of the physical examination of cows, demonstrated on a live animal. Dr. Frost gave a practical discussion of lameness in the horse.

The annual dinner was a fitting climax to the best of the fine conferences held at Cornell. Dean Moore acted as toastmaster. Dean A. R. Mann, of the State College of Agriculture, was the first speaker. He gave his observations on veterinary education in Europe. Dean Mann compared the various veterinary schools which he visited in Europe and indicated that the people of these countries attach more importance to the veterinary schools as a means to education and research than we do in this country.

He emphasized the great good to come from the enlargement of the program for research in animal pathology in New York as well as other states.

Dr. J. G. Ferneyhough, of Richmond, Va., gave a short talk, which was marked by humor and a final tribute to the professional and scientific sincerity of a colleague. Dr. James Sullivan, of the State Department of Education, was the last speaker. He paid tribute to the high ethical standard of the veterinary profession, which he felt to be higher than that of some other professions. No conference that has gone before has been marked by a better attendance, by a greater interest and certainly none has furnished so much help and inspiration to the practitioner.

C. E. HAYDEN.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION

The thirty-fourth annual meeting of the Virginia State Veterinary Medical Association was called to order at the Murphy Hotel, Richmond, by the President, Dr. John S. Nicholas, of Charlottesville, at 1:00 p.m., January 13, 1927.

Following the reading of the minutes of the previous meeting, the President delivered his annual address, in which he stressed the opportunities presented practitioners and others at these meetings for receiving beneficial instruction in the modern methods and practices used in veterinary medicine. He pointed out the fact that it is necessary for one to keep abreast of the time to be successful.

Dr. J. T. Wilson, of Hampton, presented a paper on "Meat Poisoning of Dogs," in which he gave a number of timely hints in the care and treatment of this condition. From the discussion following this paper, it is very evident that small animal practice is being given considerably more attention now than in the past.

Case reports on "Iliac Thrombosis" and "Inversion of the Uterus" were then presented by Dr. H. S. Willis, of Gordonsville, and Dr. R. E. Ferneyhough, of Warrenton, respectively. Conditions and treatment of these were fully discussed by members of the Association.

The subject of the sale and use, by anyone other than qualified veterinarians, of anti-hog cholera serum and virus and other biologics, especially those containing living organisms of disease,

was presented by a special committee. This report was very fully discussed by a large number of the members present, with much enthusiasm and interest, since this question is of vital interest to the practitioner and the live stock industry. The report was unanimously adopted by the Association, which wished to go on record as believing that the practice referred to would do more to spread contagious and infectious diseases than it would do to suppress them.

Dr. H. T. Farmer, of Richmond, discussed "Contagious Abortion and Sterility in Cattle," giving a number of his experiences and calling attention to a number of "pit-falls" encountered in diagnosis of pregnancy and treatment of sterility in cattle.

The literary part of the program was concluded with an address by Dr. Henry Marshall, inspector-in-charge, Meat Inspection Division, U. S. B. A. I., Richmond, in which he called the attention of the practitioner to a number of important points in postmortem work and emphasized the importance of veterinarians, situated in small towns and villages, doing what they could to secure municipal meat inspection.

The meeting came to a close at 1:30 p. m., January 14, with the election of officers, which resulted as follows: President, Dr. J. T. Wilson, Hampton; 1st vice-president, Dr. W. G. Black, Norfolk; 2nd vice-president, Dr. H. F. Walker, Petersburg; secretary-treasurer, Dr. W. H. Ellett, Midlothian.

It was voted to hold the next semi-annual meeting at Ocean View, on the second Thursday and Friday in July.

W. H. ELLETT, *Secretary.*

MISSISSIPPI STATE VETERINARY MEDICAL ASSOCIATION

The twenty-first annual meeting of the Mississippi State Veterinary Medical Association was held in the City Hall, Hattiesburg, January 17-18, 1927. Dr. W. O. Hughes, first vice-president, called the meeting to order at 9:30 a.m., thirty-six members being present.

The members were very fortunate in having with them one of the pioneers of the profession, Dr. Cooper Curtice, commonly known as "The Father of Tick Eradication." He worked out the life history of the cattle fever tick, way back in 1889, when some of us were still in our cradles. The results of Dr. Curtice's

investigations were followed by the measures to control malaria and yellow fever in the tropics and semi-tropical regions. Following his address on "Internal Parasites," Dr. Curtice was elected an honorary member of the Association.

Dr. F. J. Douglass, of New Orleans, La., gave a very interesting address on "Yellow Jaundice in Cattle." It was full of new information. Yellow jaundice, he said, was almost identical with African East Coast fever and that the causative agent is carried by a parasite not yet definitely known. It is probable, he thinks, that the disease-producing agent is transmitted by a small red tick recently found in the state of Louisiana and which has not yet been identified.

A very instructive two-reel scientific motion picture, showing the manufacture of serums and bacterins, was shown by Dr. Wilson and Mr. Kimzey, of Parke, Davis and Company.

The election of officers resulted as follows: President, Dr. Wilbur McPherson; 1st vice-president, Dr. W. O. Hughes (re-elected); 2nd vice-president, Dr. F. J. Douglass; secretary-treasurer, Dr. E. S. Norton.

Jackson was chosen for the next annual meeting.

WILBUR MCPHERSON, *President.*

ARKANSAS VETERINARY ASSOCIATION

The Arkansas Veterinary Association met at the Hotel Marion, Little Rock, January 19, 1927, for the twenty-second annual meeting.

After the opening remarks by the President, Dr. J. C. Young, of Marianna, Dr. Hugh L. Fry, of Little Rock, read a paper on the "McLean County System of Parasite Control," and Dr. F. R. Osborn, of Little Rock, read a paper on "Small Animal Practice." The benefits to be derived from tick eradication by the cattle industry and associated industries and veterinarians were discussed by Dr. W. A. McDonald, of Little Rock.

"The Influence of the U. S. Live Stock Sanitary Association" was presented by Dr. Joe H. Bux, State Veterinarian, and "The Veterinary Reserve Corps and C. M. T. C." by Capt. H. H. Noyes, of Little Rock.

"Extracts from Practice" was the subject assigned to Dr. E. L. Kittrell, of Augusta. It was discussed at length by Drs. I. Peters, P. A. Johnson, J. C. Young and H. C. Boyd. "Milk Hygiene, a Standard Milk Ordinance and Their Relation to the

Veterinarian" was discussed and presented with a stereopticon by Dr. Hubert Shull, of Texarkana.

At the business session, the Association subscribed ten dollars to the Schmidt Memorial Fund being raised by the A. V. M. A., and the regular annual membership in the Horse Association of America was voted.

Officers for the ensuing year were elected as follows: President, Dr. E. L. Kittrell, Augusta; vice-president, Dr. H. C. Boyd, Lake Village; secretary-treasurer, Dr. T. M. Dick, Little Rock.

HUBERT SHULL, *Secretary.*

STATE VETERINARY MEDICAL ASSOCIATION OF TEXAS

The fourth semi-annual meeting of the State Veterinary Medical Association of Texas was held at the Menger Hotel, San Antonio, Texas, January 19-20, 1927. Dr. U. E. Marney, of San Antonio, presided. Approximately seventy-five veterinarians were in attendance, many of them accompanied by their wives. Quite a number of veterinarians from out of the state were in attendance and participated in the program.

The address of welcome was delivered by Mr. Phil Wright, acting mayor of San Antonio. Dr. H. L. Darby, of Fort Worth, made the response.

High lights in the program of the first day included an address by Dr. J. E. Gibson, Bureau of Animal Industry inspector-in-charge of tuberculosis eradication in Indiana. In presenting the subject of tuberculosis eradication, Dr. Gibson stressed the need for more energetic measures in the eradication of tuberculosis among cattle and told of the work being done along this line in other states. He stated that Texas had not made very great progress in this direction.

The business session Wednesday morning was opened with a round-table discussion led by Dr. A. T. Kinsley, of Kansas City. Other features of the first day included a talk by Dr. Dudley Jackson, of San Antonio, on "Professional Intolerance"; an address by Col. M. L. Crimmins, U. S. A. Retired, on "Poisonous Snakes and Treatment of Their Bites," illustrated with stereopticon views; a talk by Dr. E. K. Glover, of Kansas City, on "Practical Elimination of Parasites in Small Animals"; an address by Dr. J. G. Horning, of Houston, on "European Veteri-

nary Conditions," illustrated with lantern-slides; a talk by Capt. W. C. Griffin, U. S. A., of Fort Sam Houston, on "Convulsions (Fright Fits) in Dogs"; and a talk by Dr. T. O. Booth, of Fort Worth, on "Bacillary White Diarrhea-Free Flock Accreditation Plan."

Discussion and reception of new members constituted the business session of the second day. During the morning, the visiting veterinarians attended a lecture by Dr. A. B. Young, of the Texas A. & M. College, on collecting blood from fowls for agglutination tests. This was given in the Veterinary Station Hospital of Fort Sam Houston. Following an X-ray exhibition, the visitors were guests of the Station Hospital at a luncheon. During the afternoon they attended a lecture on forage, discussed breeding of military-type animals and later made a tour of the veterinary hospital.

In conjunction with the men's meeting, the Ladies' Auxiliary held a business meeting at eight o'clock Wednesday morning, attended by some fifteen ladies.

Everything was done by the local veterinarians to provide entertainment for the visitors. The following committees looked after the details of the social program:

Entertainment: Drs. M. E. Gleason, J. W. Burby and Maj. Ralph Buffington; Arrangement: Drs. R. L. Rhea and M. E. Gleason, Col. Ray J. Stancliff and Capts. C. C. Whitney and A. C. Wright.

The annual meeting will be held in June at the Texas A. & M. College at the close of the present term of the school and in conjunction with the veterinary short course offered by the institution. Officers for the ensuing year will be chosen at that time.

D. PEARCE, *Secretary.*

IOWA VETERINARY ASSOCIATION

The 1927 annual meeting of the Iowa Veterinary Association was the best meeting ever held by the Association and by many it was declared the best veterinary meeting they had ever attended, both from the standpoint of interest in the program and accomplishments for the profession. Registration was required of those entering the meeting-room and the actual count showed an attendance of 405, most of whom attended all the sessions, for the hall was nearly filled most of the time.

The annual banquet, to which members of the Legislature and other distinguished citizens of Iowa were invited, exceeded by

almost 200 the largest number ever present at a previous banquet. There were 503 present for this occasion. Twenty-five ladies attended the meeting and formed a Ladies' Auxiliary, so that this feature, which is now only two years old, will continue as a permanent part of future meetings and will undoubtedly grow as the ladies themselves interest others.

The following program was carried out:

Afternoon—January 18

"Suggestions on Small Animal Surgery for the General Practitioner," Dr. E. L. Quitman, Chicago, Ill.
"Short Cuts in Practice," Dr. H. A. Bell, Ottumwa.
"Business Methods in Practice," Dr. Henry Hell, Wilton Junction.
"Iowa Laws Affecting Veterinarians and Their Enforcement," Hon. John B. Fletcher, Attorney General, Des Moines.
Committee Reports.

Morning—January 19

"The Corpus Luteum of the Ox," Dr. G. W. McNutt, Ames.
"Some Recent Observations on the Physiology of the Rumen," Dr. H. H. Dukes, Ames.
Discussion and question-box on "Dairy Cattle Practice," Dr. C. H. Case, Akron, Ohio.

Afternoon—January 19

"Some Observations in Tuberculosis Eradication Work," Dr. H. N. Strader, Marion.
"Cooperative Agencies in County Area Tuberculosis Eradication Work," Dr. W. C. Stewart, New Hampton.
"Tuberculosis Eradication in Cattle, Swine and Poultry in Hillsdale County, Michigan," Dr. T. S. Rich, Lansing, Mich.
"Researches in Tuberculosis," Dr. M. P. Ravenel, Columbia, Mo.

Banquet Program—January 19

Dean C. H. Stange, *Toastmaster.*
"The State of Iowa and the Veterinary Profession," Governor John Hammill, Des Moines.
"Some Contributions of Veterinary Science to Public Health," Dr. M. P. Ravenel, Columbia, Mo.
"Tuberculosis Eradication in Animals from an Economic Viewpoint," Mr. Chas. H. Sloan, Geneva, Nebr.
"The Live Stock Industry and the Veterinary Profession," Mr. Thos. H. Holbert, Greeley, Iowa.

Morning—January 20

"Observations on the Recent Outbreak of Hog Cholera in the United States," Dr. T. P. White, Washington, D. C.
"Field Observations on Swine Diseases," Dr. T. G. Fultz, Pella (Illustrated).
"A Report on Immunizing Suckling Pigs Against Hog Cholera," Dr. C. H. Covault, Ames.
"Hog Cholera Vaccination Breaks and Their Prevention," Dr. J. W. Benner, Ithaca, N. Y.
"Post-Vaccination Troubles," Dr. J. C. Glenn, Norway.

Afternoon—January 20

Business Session—Committee Reports—Election of Officers.
"Cooperation Between Extension Service and the Local Veterinarians in Iowa," Prof. H. R. Bliss, Ames.
"Some Recent Developments in Poultry Practice," Dr. Sivert Eriksen, Kansas City, Mo.

Discussion and question-box on "Small Animal Therapeutics," Dr. E. L. Quitman, Chicago, Ill.

Clinic Program at Ames—January 21

Poultry Clinic—Dr. Sivert Eriksen, Kansas City, Mo.
Douching the uterus and udder operations—Dr. C. H. Case, Akron, Ohio.
Demonstration of intraspinal anesthesia and wire obstetrical saw—Dr. H. E. Bemis, Ames.
Small Animal Clinic—Dr. E. L. Quitman, Chicago, Ill.

As many of the papers and addresses will be published in the various journals, including the question-boxes by Drs. Case and Quitman, further comment is not necessary other than to say that each speaker presented his paper in a very instructive and forceful manner. The Association voted a resolution of thanks to Drs. Case, Quitman, Rich, Ravenel, White, Benner and Eriksen for coming to Iowa to contribute so wonderfully to the program.

Other resolutions of general interest were as follows:

Believing that the work now being done toward the ultimate eradication of tuberculosis among live stock is for the best interest of the live stock industry as well as the general public health, be it resolved that the Association heartily endorses the work and favors as rapid extension of the project as may be deemed advisable.

That, the Iowa Veterinary Association requests that the Extension Department of the Iowa State College require that veterinarians in its Department confine their activities to educational work and discontinue all commercial activities associated in any way with this work.

That, all veterinary activities by the Extension Department, such as radio addresses, bulletins and public statements regarding animal diseases, be approved by the Veterinary Division before being released to the public.

Thirty-five new members were admitted to the Association. By the system of registration which was in force, every member had to pay his dues before he was admitted to the meeting-room. Iowa veterinarians who were not members had to pay a registration fee of $3.00. Visitors from other states did not have to pay this fee but had to be vouched for by a member. A lady stood at the door of the meeting-room and did not allow a single person to enter without showing a button indicating that he was either a member or a visitor. This system kept from the meeting all undesirable people and it was highly pleasing both from that standpoint and as an effective way of keeping the dues paid up. The Association now has 499 members in good standing on the roll.

The following officers were elected: President, Dr. J. W. Haxby, Clarinda; 1st vice-president, Dr. N. J. Deiling, Dallas Center; member of Executive Committee, Dr. J. C. Glenn, Norway; Secretary, Dr. E. R. Steel, Grundy Center.

E. R. Steel, *Secretary.*

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Maryland State Veterinary Medical Association was held at Medical Hall, Baltimore, January 20, 1927, with forty-seven members in attendance. Visitors present included two Cuban Army officers and twelve United States Army officers. This is believed to be a record attendance of army officers at a state veterinary association meeting.

The meeting was called to order by the President, Dr. J. W. Hughes, of Ammendale. The presidential address was rather short, but very much to the point. Dr. Hughes first thanked the officers and members of the Association for the honor conferred upon him, and for the hearty cooperation received. He then called attention to some of the advancements made during the past few years, together with new problems which the added information has brought to the profession. For example, the change in transportation from horse-power to motor vehicles has not only largely eliminated the horse in many sections of the country, but has also speeded up business generally. Therefore, to keep up to date, the practitioner must bring his business methods and his professional services up to the highest possible point of efficiency.

It was further pointed out that the profession has formulated a rather definite and commendable code of ethics. This, of course, prevents advertising in the generally accepted meaning of the term. The profession, however, is in a situation similar to human medicine in this respect. Here several most admirable methods are employed for bringing the subject to the attention of the public. Why should not the same or similar methods be employed by veterinarians? The address was concluded with the statement that veterinary medicine is not facing an impossible situation. In fact, the demand for service is greater than the supply.

Dr. R. V. Smith, of Frederick, presented a very interesting paper, "The Equipment for General Practice." He believes that the practitioner should travel fully equipped with instruments, drugs, etc., so that he is in a position to render practically any service required at any time. This does not prove to be a great inconvenience, as the practitioner usually travels by automobile, and thus has space available for carrying the equipment. Dr. Smith regularly carries three bags. One contains surgical equip-

ment; the second, drugs; and the third, the obstetrical equipment. The contents of each bag were enumerated. This procedure places one in a position to render much better service, and also to handle more calls.

Dr. Edward B. Meigs, of the U. S. Bureau of Dairy Industry, followed Dr. Smith. Dr. Meigs presented the subject, "Mineral Metabolism in Dairy Cows." This first-hand information on so important and, at the same time, controversial a subject, was very much appreciated by the members of the Association. He reviewed the literature and discussed the major experiments which have been made. He feels that very little is usually accomplished by the use of mineral supplements, in this part of the country. Much better results are obtained when well-cured hay of a good quality is fed. This is essentially true of the legumes. He also thinks that calcium and phosphorus deficiencies may be found to play a very important role in the breeding troubles of cattle.

Dr. R. A. Pearson, president of the University of Maryland, next gave a very interesting talk. He assured the Association that the State Board of Agriculture and the University of Maryland would deem it an honor to cooperate with the profession.

The last paper of the morning session was presented by Dr. W. E. Cotton, of the U. S. B. A. I. Experiment Station, Bethesda. His subject was "My Experiences with Vesicular Stomatitis in New Jersey." Dr. Cotton reported rather fully on this outbreak of the disease. He found that the malady spread very rapidly, but not so fast as foot-and-mouth disease. A modified form of foot-and-mouth disease quarantine was employed against it, however. The malady presents symptoms similar to those of foot-and-mouth disease and can best be differentiated from it by the use of animal inoculation, employing the horse. In this country, at least, the horse appears to be immune to foot-and-mouth disease, but is susceptible to vesicular stomatitis. It has been shown also that there are two distinct strains of vesicular stomatitis in America. Further, that one of these viruses fails to produce an immunity which will protect against the other.

The first paper of the afternoon was presented by Dr. W. J. Lentz, Director of the Small Animal Clinic, University of Pennsylvania. His subject was "Feeding the Dog." Dr. Lentz briefly discussed the processes of digestion in this animal. He then gave us some very interesting information obtained from experiments with ptomaines in the intestinal tract. They may

cause convulsions, etc. Improper feeding is very common with this species of animals. In fact, most dogs are over-fed. Many others are not given the correct foods or at the proper intervals. Such practices are responsible for many ailments, as, for example, the so-called "fright" disease, and some of the skin troubles. Diets were suggested for healthy dogs of the different breeds, as well as for sick and convalescent animals.

The last paper was entitled, "Experiences as a Military Observer and as Chief Veterinarian, A. E. F., World War," and was presented by Lieut. Col. Wm. P. Hill, Washington, D. C. Col. Hill's experiences with the French and British were instructive and interesting. The British had the best veterinary service in the world. The war demonstrated that horse mobility is still an absolute necessity. It also demonstrated that veterinarians were absolutely essential for the success of the Army. These experiences are responsible for the present veterinary organization in the Army.

The officers elected for the ensuing year were: Dr. F. W. Cruickshanks, Hagerstown, president; Dr. H. A. Meisner, Baltimore, vice-president; Dr. E. M. Pickens, College Park, secretary-treasurer; Dr. G. H. Grapp, Baltimore, member of the Executive Board.

E. M. Pickens, *Secretary.*

MICHIGAN STATE COLLEGE POST-GRADUATE SHORT COURSE

The fourth annual Post-Graduate Short Course for Veterinarians was conceded to be a success. It was held January 24-28, 1927, in the Clinic Building of Michigan State College, presided over by Doctors Hutton and Sales. The course as usual was given by the Veterinary Division of the College in cooperation with the Bureau of Animal Industry, Michigan State Department of Agriculture. There were sixty-five veterinarians registered and at least twenty others were present who did not register. Although this is probably the longest short course given to veterinarians in this country, the attendance was well sustained throughout.

Much credit for the success of the course is due Dr. H. J. Stafseth, who began working on the program several months ago and made very notable contributions to nearly every phase of the program during the week.

State Veterinarian Killham, Dr. W. H. Beck, Dr. E. P. Johnson and Dr. S. R. Johnson contributed to the making of a very successful poultry clinic. Dr. T. S. Rich handled avian tuberculosis very ably. Professors Ferguson and Hannah, of the M. S. C. Poultry Department, established a very fine poultry husbandry background for the strictly veterinary aspects of the subject.

Professors Reed and Huffman gave their time during a half-day to the discussion of nutritional problems. Mr. A. J. Glover, of Hoard's Dairyman, continued the discussion at a banquet given by the Capitol Veterinary Medical Association, giving the dairyman's point of view. Very little time was devoted to recreation, but anyone who heard Jimmy Hays tell about the fine points of his "model cow" will be glad to recommend Jimmy for the vaudeville stage. Perhaps he put across a lesson as smoothly as a veterinarian would give a sugar-coated pill.

Dr. W. L. Chandler handled the subject of parasites and parasitism, bringing out something of value in connection with the use of iodin as a vermifuge and disinfectant. The success of the poultry-practice sessions was made certain by the assistance of some prominent practitioners from Michigan, northern Ohio and Indiana. Mention should be made of Doctors F. E. Caswell, J. A. Schaefer, A. B. Curtice, A. J. Kline and W. B. Massie.

The cattle program was made up of a most interesting and practical talk by Dr. L. H. Smith and one by Dr. A. E. George. Dr. F. E. Stiles demonstrated spinal anesthesia on the cow very successfully. Dr. L. B. Sholl discussed the new theory of hypoglycemia in milk fever.

The horse was not forgotten. Dr. J. P. Hutton gave an interesting talk on the roaring operation.

Small animal practice was to have been featured by Dr. O. V. Brumley, of Ohio State University, who was unable to attend on account of illness. He was very graciously represented by Dr. J. H. Snook. Dr. J. W. Patton discussed dog distemper and demonstrated the ultraviolet machine. Doctor Sholl discussed coccidiosis in ruminants.

The hog was not entirely neglected, as Dr. George McCollister discussed the present situation and Doctor Stafseth called attention to some swine diseases familiar to Europeans but comparatively rare in this country.

Either the program was very attractive in the reading, or the veterinarian is more hopeful of his profession and approves of

the graduate-school plan. The success of a meeting, of course, is due (at least fifty-one per cent) to the enthusiasm of those in attendance. Hence we may justly attribute the success of our fourth annual to the veterinarians who registered for the course.

W. G.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Connecticut Veterinary Medical Association was held in Hartford, at the Hotel Garde, February 2, 1927. The program was as follows:

Why Veterinarians Should be Interested in Poultry Disease Control, by Dr. J. M. Hendrickson, Institute of Applied Agriculture, Cornell University, Farmingdale, L. I. Discussion: Drs. A. T. Gilyard, V. M. Knapp and J. J. Kavanek.

Discussion of the Area Test; Increasing the Efficiency of Physical Examination of Cattle; Poultry Disease Control, by Hon. James M. Whittlesey, Commissioner on Domestic Animals, Hartford. Open discussion.

Officers for the ensuing year were elected as follows: President, Dr. Wallace F. Vail, Greenwich; 1st vice-president, Dr. R. J. Morin, Rockville; 2nd vice-president, Dr. W. J. Southey, Bridgeport; secretary, Dr. George E. Corwin, Hartford; treasurer, Dr. Thomas Bland, Waterbury. Board of Censors: Drs. James H. Prophett, Suffield; A. T. Gilyard, Waterbury; F. W. Page, Danielson; E. H. Patchen, Milford; George T. Crowley, New Britain.

It was voted that $25.00 be donated by the Association for the Schmidt Memorial Fund, which is being raised by the A. V. M. A.

GEO. E. CORWIN, *Secretary.*

CUBAN NATIONAL VETERINARY ASSOCIATION

At a regular meeting held in Havana, January 11, 1927, Dr. R. deCastro eulogized the memory of Dr. L. de la Torre, who died the past year. Dr. L. de la Torre was active in the struggle for Cuban independence and organized the meat inspection service in Havana.

A note of thanks was given Dr. Francisco M. Fernandez, Secretary of Public Health, for arranging to have a veterinary member of the National Board of Health.

A committee consisting of Drs. Crespo and deCastro was appointed to confer with the mayor of Havana, on improving the meat inspection service of the city.

N. S. M.

TENNESSEE VETERINARY MEDICAL ASSOCIATION

The nineteenth annual meeting of the Tennessee Veterinary Medical Association was held in Nashville, at the Andrew Jackson Hotel, January 19-20, 1927. The meeting was called to order by the President, Dr. J. C. Gill, of Clarksville.

The address of welcome was made by Commissioner Homer Hancock, who laid great stress on how much better off were the owners of live stock than the cotton farmers in the southern states. Dr. Julius L. Topmiller, of Bowling Green, Ky., made the response. The address of the President, delivered by Dr. J. C. Gill, was most interesting to all present and especially so to the veterinarians engaged in general practice.

The program was arranged in the form of lectures and questionnaires "Horse Practice" was in charge of Drs. F. W. Morgan, of Chattanooga, and Charles Wright, of Jackson. Dr. Morgan stated that the outlook for the demand for saddle horses was particularly bright and that this would redound to the benefit of veterinarians. The discussion was led by Dr. George R. White, of Nashville. Dr. Wm. M. Bell, of Nashville, gave a very lengthy and interesting talk on a number of animal diseases. All who heard him felt well repaid for their trip to Nashville just to receive the information that Dr. Bell had in store for them. All the members who were not present to hear Dr. Bell missed a very rich opportunity to gain some very important knowledge.

Dr. M. Jacob, of Knoxville, filled the capacity of "veterinarian in reserve" to take the place of any one who had been placed on the program, in charge of one of the lecture and questionnaire periods, and failed to be present at the appointed time or in the event of the veterinarian in charge choosing to call on him. Practically every member agreed that this was our best drawing-card and our attendance was larger than at any former meeting.

The other lectures and questionnaires covered the fields of cattle practice, small animal practice, swine practice, sheep practice, diseases of poultry, veterinary medicine and veterinary surgery, each one being in charge of a prominent veterinarian.

The election of officers for 1927 resulted as follows: President, Dr. L. D. Nowell, of Humboldt; 1st vice-president, Dr. R. E. Baker, of Morristown; 2nd vice-president, Dr. C. F. Delap, of Springfield; treasurer, Dr. Walter M. Giles, of Franklin; secretary, Dr. A. C. Topmiller, Murfreesboro.

Jackson was selected for the place of the next meeting.

Dr. M. Jacob was recommended unanimously by the members of the Association to succeed himself on the State Board of Veterinary Medical Examiners. This recommendation was transmitted to the Governor.

A. C. TOPMILLER, *Secretary.*

MASSACHUSETTS VETERINARY ASSOCIATION

The Massachusetts Veterinary Association met at the Twentieth Century Club, Boston, February 23, 1927. Supper was served to about forty members at 6 o'clock.

The evening meeting was opened by the president, Dr. E. A. Crossman. Various legislative bills were presented for the information of those present. These pertained to testing for tuberculosis and were endorsed by the Association.

Following the business session, an illustrated talk was given by Dr. H. W. Jakeman, on "Rabies." Dr. Jakeman discussed the nature of rabies virus and the control of the disease through centralized authority and vaccination. He pointed out the pitfalls in vaccinating and cautioned against using one injection of vaccine in exposed or bitten animals.

H. W. JAKEMAN, *Secretary.*

SOUTHEASTERN MICHIGAN VETERINARY MEDICAL ASSOCIATION

FEBRUARY MEETING

The regular monthly meeting of the Southeastern Michigan Veterinary Medical Association was held at the Board of Health headquarters, Detroit, February 9, 1927. The usual dinner preceded the meeting.

The first number on the program was the showing of a new motion-picture film, entitled, "How Biological Products Are Made." This film was obtained through the kindness of Parke, Davis and Company and many favorable comments were made on it, particularly by those veterinarians who had never had an opportunity to see some of the steps in the production of serums and vaccines.

Dr. C. M. Hamilton, of Detroit, was admitted to membership. Dr. E. P. Schaffter reported the results of his investigation to find out what arrangements would have to be made for securing

a motion-picture film or two for each meeting from the U. S. Department of Agriculture. The report was accepted and Dr. Schaffter was instructed to arrange for securing films for the next three meetings.

The question of a more systematic method for reporting upon the results of the vaccination of dogs was thoroughly discussed. After various members had spoken of their experiences with the present method and numerous suggestions had been made for improvements, a motion prevailed to refer the matter to a committee to be appointed by the Chair, this committee to study the question further and bring in recommendations at the next meeting. On the committee President Schlingman appointed Dr. H. T. Carpenter, Dr. E. E. Patterson, Dr. W. P. S. Hall and Dr. H. Preston Hoskins.

Dr. N. S. Ferry, of Parke, Davis and Company, was then called upon to present his talk on "Specific Streptococcic Toxins." Dr. Ferry has carried on a great deal of original research work with the streptococci, particularly those which appear to have a very intimate relation with such diseases as measles, scarlet fever and erysipelas. Dr. Ferry's remarks were illustrated with a large number of lantern-slides and photographs. A general discussion then took place, at the conclusion of which Dr. Ferry was given a rising vote of thanks by the members present.

Dr. E. B. Cavell, of Northville, then read a paper, entitled, "The Country Practitioner." In this paper Dr. Cavell brought out what he considered to be the bright side of a general country practice. It was a very unusual paper and contained much food for thought, particularly in these days when there is such a noticeable trend in the way of veterinarians seeking and accepting salaried positions in other fields than practice. Dr. Cavell made it very plain that no salaried job had any particular attraction for him and that he would continue to get the greatest amount of satisfaction out of life by continuing to serve his clients in the capacity of a private practitioner.

A very lively discussion of the Veterinary Practice Act took place, as a result of which the Secretary was instructed to draft a letter to be sent to the chairman of the Legislative Committee of the Michigan State Veterinary Medical Association, directing attention to violations of the Act in Detroit and alleged shortcomings of the Act which made successful prosecutions difficult.

March Meeting

The regular monthly meeting was held at the Board of Health headquarters, Detroit, March 9, 1927. Following the usual dinner, the evening program was opened by showing the well-known film "Exit Ascaris," secured from the U. S. Department of Agriculture.

The committee appointed to bring in recommendations for changes in the method of reporting the vaccination of dogs against rabies presented their report. This was approved with one change.

President Schlingman asked for expressions of opinion relative to the holding of meetings during the summer months. A motion prevailed that no meetings be held during June, July and August. At the same time plans for the April meeting were discussed and, as this will be the tenth anniversary of the organization of the Association, it was decided to celebrate the occasion with a banquet.

The Secretary read the letter which he had written to Dr. A. McKercher, relative to the Veterinary Practice Act; also a communication from Dr. E. K. Sales, secretary of the Michigan State Veterinary Medical Association, relative to the same matter. The Committee on Legislation expressed the opinion that it would be inadvisable to open up the Veterinary Practice Act at this session of the Legislature. This action was approved by the Association.

Dr. R. H. Wilson, chief veterinarian, Parkedale Farm, Rochester, addressed the meeting on the subject of "Pathological Conditions Encountered in Horses Used for the Production of Biological Products." Dr. Wilson has had from 400 to 800 horses under his supervision for the past fifteen years and during this time has made many interesting observations on the pathological conditions which develop in horses that are being used for the production of antitoxic and antibacterial serums. All of these horses are submitted to careful autopsy when their serum-producing period has ended. It was in connection with these postmortem findings that Dr. Wilson reported his observations. He also included his findings in calves used for the production of smallpox vaccine and blackleg products. Due to the comparatively short time that calves are in use for the production of these products, the variety of pathological conditions encountered is rather limited.

Dr. E. F. Sheffield, who has veterinary supervision over about 550 horses belonging to the Detroit Creamery Company, was then called upon to discuss "Diseases and Conditions Met in Horses Used in City Delivery Service." Dr. Sheffield presented his subject in a very interesting fashion and his remarks dispelled any idea that veterinarians in large cities no longer are called upon to handle diseases and conditions peculiar to horses. One of the most interesting features of Dr. Sheffield's talk was in connection with his method of handling accident cases, particularly those in the suburban districts, the result of having to travel streets and roads that are almost impassable at certain times of the year.

Roll-call showed thirty-four members present.

H. PRESTON HOSKINS, *Secretary.*

DR. LOCKHART WITHDRAWS FROM KINSLEY LABORATORIES

Dr. Ashe Lockhart announces that he has completely withdrawn from the Kinsley Laboratories, Inc., Kansas City, Mo. Dr. Lockhart has been associated with this institution as Laboratory Director since 1916, with the exception of a few months, during which Dr. Lockhart was in the army. During ten years of his connection with the Kinsley Laboratories, Dr. Lockhart was in active charge of the diagnostic laboratory and has been secretary-treasurer of the institution since its incorporation, several years ago. Dr. Lockhart's present address is 3241 Montgall Ave., Kansas City, Mo.

PENNSYLVANIA CLASSES PLAN REUNIONS

The 1912 class of the School of Veterinary Medicine, University of Pennsylvania, will celebrate its fifteenth anniversary by holding a reunion at the school on Alumni Day, June 11, 1927. The committee in charge of plans for the reunion is composed of the following members of the class: Drs. E. E. Behrens, C. O. Neuhaus, H. M. Michener and Peter J. Haley.

The 1907 class will celebrate its twentieth anniversary by holding a reunion at the same time. Dr. Harry W. Schoening, of Washington, D. C., who recently returned from a year spent in Europe as a member of the commission to study foot-and-mouth disease, is president of the 1907 class and will preside over the meeting.

NECROLOGY

A. W. SWEDBERG

Dr. A. W. Swedberg died at Denver, Colorado, December 19, 1926. Born in Washington, D. C., July 1, 1868, he attended the Washington public schools, Virginia A. & M. College and later the Ontario Veterinary College, from which he was graduated in 1890. He practiced near Washington for about five years and then entered the Bureau of Animal Industry. He was stationed at National Stock Yards, Ill.; St. Louis, Mo.; Kansas City, Kans.; Omaha, Nebr. and Denver, Colo. Dr. Swedberg was a member of the South Denver Lodge No. 93, A. F. & A. M. and was buried with full Masonic ceremonies, the pallbearers being Masons in the B. A. I. service. He is survived by his widow, his mother, and several brothers and sisters.

HOMER HERRON

Dr. Homer Herron, of Chicago, Ill., died at Hot Springs, Arkansas, January 7, 1927, at the age of 43 years.

A native of Ohio, Dr. Herron received his veterinary training at the Chicago Veterinary College, from which he was graduated in 1909. For a number of years he acted in the capacity of assistant to Dr. A. H. Baker, of Chicago. Later he took over the extensive small animal practice of Dr. C. A. White, when the latter moved to Los Angeles. Dr. Herron was a charter member of Gamma Chapter of Alpha Psi Fraternity.

SAMUEL G. HENDREN

Dr. Samuel G. Hendren, of Lewistown, Pa., died at his home, January 30, 1927, after a lingering illness of more than three months.

After his graduation from the University of Pennsylvania, with the class of 1894, Dr. Hendren spent several years in meat inspection work, with the Bureau of Animal Industry, both in the United States and England. Later he located at Lewistown and built up an extensive practice there. He soon became actively identified with civic life in Lewistown, particularly in the activities of the local Chamber of Commerce. He was a member of the first Board of Directors of the local Y. M. C. A. He served as

chairman of the Committee on Public Safety and was director of the Government Employment Bureau during the late war. He also held a captaincy in the Veterinary Section of the Medical Detachment attached to the Fifty-Second Machine Gun Squadron.

Dr. Hendren joined the A. V. M. A. in 1899. He was a member of the Pennsylvania State Veterinary Medical Association and served as vice-president, 1920-1921. An appreciation of some of Dr. Hendren's activities appeared in the JOURNAL, June, 1926 (p. 342).

F. F. HOFFMAN

Dr. F. F. Hoffman, of Brookville, Pa., died February 11, 1927. His death was the indirect result of an injury to his foot received eight years previously.

Born in Brookville, October 19, 1850, Dr. Hoffman attended the Ontario Veterinary College and was graduated with the class of 1885. He returned to Brookville and practiced there all of his life. He was a member of the Pennsylvania State Veterinary Medical Association and was honored with the presidency of that organization in 1906.

Dr. Hoffman joined the A. V. M. A. in 1898. He is survived by his widow, four daughters, three sons, four brothers and one sister. Dr. Hoffman was held in very high esteem in the community which he served so long and so well.

HARRY JONES

Dr. Harry Jones, of Deer Lodge, Montana, died February 13, 1927, following an illness of several months. Born March 17, 1872, Dr. Jones attended high school and then entered the Chicago Veterinary College. He received the degree of M. D. C. in 1894 and practiced for a number of years at Atlanta, Ill. He then moved to Montana and was located successively at Drummond, Missoula and Deer Lodge, as a depty state veterinarian.

Dr. Jones joined the A. V. M. A. in 1920. He is survived by his father, one daughter and one sister.

ROBERT W. ARCHIBALD

Dr. Robert W. Archibald, of Minneapolis, Minn., died February 14, 1927, from injuries sustained in an automobile accident near Nashwauk, Minn., four days previously. The car

in which Dr. Archibald was riding with two associates skidded into a concrete viaduct.

Born at Hinsdale, N. H., October 11, 1889, Dr. Archibald attended Stevens High School and Dartmouth College before matriculating in the University of Pennsylvania School of Veterinary Medicine, in the fall of 1908. Following his graduation in 1911, Dr. Archibald became interested in dairy inspection work. For a number of years, he was city milk inspector of Winona, Minn. He then took up work with the Minnesota State Department of Health. During the ten years in which he was associated with this Department, Dr. Archibald was largely instrumental in bringing about the adoption of ordinances regulating the milk supply in more than 100 cities and towns in Minnesota. Dr. Archibald also held the position of assistant professor of preventive medicine and public health at the University of Minnesota.

CHRISTOPHER J. BOUSFIELD

Dr. Christopher J. Bousfield died very suddenly at his home in Charlottetown, Prince Edward Island, February 16, 1927. Although he had not been in the best of health for two or three years, during which time he had been a sufferer from heart trouble, his death was very unexpected.

Born in England, August 21, 1866, Dr. Bousfield came to Canada at an early age. He was graduated from the Ontario Veterinary College in 1902 and first practiced his profession near Hamilton, Ont. Since June 18, 1913, he was employed by the Dominion Department of Agriculture as veterinary inspector in the Meat Inspection Division, Health of Animals Branch. He removed to Prince Edward Island about ten years ago. He was a conscientious, faithful employe, with a very genial disposition. He enjoyed a wide popularity among all those with whom he came in contact.

Dr. Bousfield joined the A. V. M. A. in 1918. He served as resident provincial secretary for Prince Edward Island from 1921 to date. Dr. Bousfield is survived by his widow, one sister and one brother.

LESLIE L. CRAWFORD

Dr. Leslie L. Crawford, of Hopkins, Mich., died February 20. 1927, at the age of forty-one years.

A graduate of the Grand Rapids Veterinary College, class of 1908, Dr. Crawford had spent his entire professional career at

Hopkins, where he had built up a very nice practice. Dr. Crawford was found ill in his office in the afternoon. Unaware of the seriousness of his condition, friends removed him to the home of his parents where he died soon afterwards. According to the verdict of the coroner, death apparently was the result of taking a large dose of a drug with suicidal intent, as messages to his wife and parents and requests regarding his funeral and the disposition of his property were found in his clothing.

Dr. Crawford was a member of the Michigan State Veterinary Medical Association. He is survived by his widow, his parents and one brother.

M. A. STOREY

Dr. M. A. Storey, formerly of Bradford, Ill., passed away at the home of his daughter in Bloomington, Ill., February 24, 1927. Death resulted from a stroke.

Born in Bloomington, Ont., September 24, 1866, Dr. Storey attended the local schools and later the Upsbridge High School. He then entered the Ontario Veterinary College and was graduated in 1891. He located in Princeton, Ill., where he practiced his profession with a brother, Dr. R. W. Storey. Later he removed to Buda and from there to Bradford, where he practiced for almost twenty-five years. He is survived by one daughter, one son, six brothers and one sister.

ELISHA HANSHEW

Dr. Elisha Hanshew died at his home in Garden City, Long Island, N. Y., February 23, 1927.

Born in Walford, England, February 13, 1850, Dr. Hanshew came to this country as a youth and pursued his veterinary studies at the American Veterinary College. He was graduated in 1880. For many years he was veterinarian to the Fire Department of Brooklyn, N. Y., where he practiced until he retired a few years ago.

Dr. Hanshew first joined the A. V. M. A. (then the U. S. V. M. A.) in 1881. He was dropped from the roll in 1890 and reinstated in 1903.

The aged father of Dr. C. J. Heckard, of Wheatland, Iowa, died February 26, 1927. He was in his 88th year and the sole surviving Civil War veteran in his community.

WILLIAM P. WATKINS

Dr. William Peterson Watkins, of Memphis, Tenn., died March 5, 1927, at the age of 75 years. He had been a resident of Memphis for nearly 40 years. The deceased was the father of Dr. Howard J. Watkins (McK. '18), who died January 4, 1924.

GEORGE C. HOAGLAND

Dr. George C. Hoagland, of Rushville, Ill., died at his home March 6, 1927, following a protracted illness. He was born near Jacksonville, Ill., July 20, 1855, and practiced in Schuyler County for many years.

JAMES W. FULLER

Dr. James William Fuller, of Shoals, Ind., was found dead in his barn, January 29, 1927.

CHARLES J. O'BRIEN

Dr. Charles J. O'Brien, of Edina, Mo., died at St. Mary's Hospital, Quincy, Ill., March 8, 1927, after an illness of three years. He was born in Cascade, Wisconsin, May 12, 1864.

PERSONALS

MARRIAGES

Dr. Edward M. Grossman (N. Y. U. '18), of Philadelphia, Pa., to Miss Essye Schiller, of Brooklyn, N. Y., December 13, 1926, in Philadelphia, Pa.

Dr. William Kemp Nugent (Corn. '25), to Miss Gay Nell Minor, both of Philadelphia, Pa., January 15, 1927.

Dr. Bernard R. Mann (U. P. '17), to Mrs. Eleanor H. Hartz, both of Philadelphia, Pa., February 23, 1927, in Philadelphia, Pa.

BIRTHS

To Dr. and Mrs. A. R. Menary, of Cedar Rapids, Iowa, twin sons, Thomas Orr and Robert Lunn, January 7, 1927. Robert Lunn died January 9.

To Dr. and Mrs. H. S. Lames, of La Porte City, Iowa, a daughter, Shirley Anne, January 29, 1927.

To Dr. and Mrs. Fred Boerner, of Drexel Hill, Pa., a son, January 31, 1927

To Dr. and Mrs. R. A. Hendershott, of Trenton, N. J., a daughter, Myra Jean, January 31, 1927.

To Dr. and Mrs. John T. E. Dinwoodie, of Aberdeen, S. D., a daughter, Adelaide, February 8, 1927.

To Dr. and Mrs. William A. Hagan, of Ithaca, N. Y., a daughter, Margaret Elaine, March 19, 1927.

PERSONALS

Dr. Charles V. Gott (T. H. '14) is mayor of Portland, Ind.

Dr. Reuben Gordon (Corn. '25) is in practice at Patchogue, N. Y.

Dr. L. E. Stanton (Iowa '25) has removed from Owatonna, Minn., to Burt, Iowa.

Dr. Olene Jacobson (Iowa '25), formerly of Burt, Iowa, has located at Round Lake, Minn.

Dr. H. L. McCormick (Ind. '15) has removed from Wilkinson, Ind., to Pendleton, Ind.

Dr. Paul L. Mathews (K. C. V. C. '17) has removed from Columbus, Ohio, to Pierce, Nebr.

Dr. Edw. C. Jesperson (McK. '16) is now with the Keystone Farms, at Waukesha, Wis.

Dr. D. D. Conner (K. C. V. C. '11), formerly of Fort Smith, Ark., is now at Pine Bluff, Ark.

Dr. J. D. Paxton (Ont. '96), formerly of Nelson, B. C., is now located at Grand Forks, B. C.

Dr. G. D. Bishop (K. C. V. C. '12) has removed from Salem, Oregon, to Albany, same state.

Dr. James A. Pendergast (Ont. '91), of Syracuse, N. Y., recently suffered a stroke of paralysis.

Dr. B. C. McLean (U. P. '20), formerly of Johnstown, S. C., is now located at Aiken, same state.

Dr. F. N. Burke (Ont. '08), of Syracuse, N. Y., was unfortunate enough to break an arm recently.

Dr. R. C. Duthie (Ont. '14), formerly stationed at Lethbridge, Alberta, is now in Ottawa, Ontario.

Dr. C. B. McGrath (Iowa '23) has changed locations, from Sutherland, Nebr., to Hyannis, Nebr.

Dr. H. W. Read (U. S. C. V. S. '96) has changed his address from Freehold, N. J., to Hightstown, N. J.

Dr. O. I. Holloway (O. S. U. '17) has opened the Blue Cross Hospital for Small Animals, at Piqua, Ohio.

Dr. Robert L. Galt (U. P. '23), of Leman Place, Pa., is now located at 608 East End Avenue, Lancaster, Pa.

Dr. F. H. Zimmerman (McK. '11), of Havana, Ill., has been appointed Effingham County (Ill.) Veterinarian.

Dr. Charles H. Reid (K. C. V. C. '18), of Los Angeles, Calif., gives a new Hollywood address—1151 Highland Avenue.

Dr. A. J. Sipos (Geo. Wash. '16), formerly of Manassas, Va., is now located in Newark, N. J. Address: 57 James Street.

Dr. E. L. Brunett (Corn. '25), Instructor in Poultry Diseases, Cornell University, plans to sail for Europe next month.

Dr. J. J. Regan (Corn. '15), formerly of Auburn, N. Y., is now located in New York City. Address: 120 West 42nd Street.

Dr. Kenneth G. McKay (Wash. '20), of Spokane, Wash., is now with the California State Department of Agriculture, Los Anglees.

Dr. Robert O. Biltz (U. P. '22), of Ashland, Pa., is now with the Pennsylvania Bureau of Animal Industry, attached to the Laboratory in Philadelphia.

Dr. Samuel E. Young (O. S. U. '17), of Pittsburgh, Pa., recently joined the list of veterinarians bitten by rabid dogs. He underwent the Pasteur treatment.

Dr. Burton A. Perry (Gr. Rap. '12), of Hastings, Mich., has been appointed Barry County (Mich.) Veterinarian, in connection with tuberculosis eradication work.

Dr. Clarence E. Bolton (Corn. '26), who has been associated with Dr. C. D. Carpenter (Corn. '20) in California, has located temporarily at Newburgh, N. Y.

Dr. L. T. Giltner (Corn. '06), who has been located in Milford, Del., for several years, has returned to the Pathological Division of the B. A. I., Washington, D. C.

Dr. H. E. Rea (Ont. '02), of West Branch, Mich., has been appointed Ogemaw County (Mich.) veterinarian. Dr. Rea will devote half-time to county work.

Dr. H. C. Graham (Ont. '14), of Barryton, Mich., has accepted a position with the Michigan State Department of Agriculture and will be assigned to tuberculin testing.

Dr. W. J. Bishop (Iowa '26), formerly of Morrisonville, Ill., has accepted the position of City Dairy Inspector of Bartlesville, Oklahoma, at a reported salary of $3000 per year.

Dr. A. H. French (Chi. '91), of Birmingham, Ala., has retired from active practice on account of poor health and advancing years. Dr. French is now in his eighty-seventh year.

Dr. J. F. Gillespie (Ont. '97), of Tuscola, Mich., lost his home by fire, early in March. The house was one of the oldest landmarks of the community, having been built about 1864.

Dr. R. C. Johnson (Corn. '20) is located at Monticello, N. Y., as County Clerk. At the expiration of his three-year term of office, Dr. Johnson plans to resume his professional work.

Dr. Bernard M. Collins (U. P. '11), of Pittsfield, Mass., was enrolled for a special course in Disease of Small Animals, at the University of Pennsylvania School of Veterinary Medicine, during the winter.

Dr. Arthur A. Wilcox (O. S. U. '12), of La Grange, Ohio, has been commissioned as Captain in the Veterinary Corps of the Ohio National Guard and assigned to the 37th Division Train, Q. M. C., for duty.

Dr. F. R. Bartlow (Ind. '17), who for the past ten years has conducted the "Old Trails Kennels," on the National road east of Indianapolis, has opened a new hospital for dogs and cats at 2929 Central Avenue, Indianapolis.

Dr. H. C. Crawford (U. P. '09), of Jamaica, N. Y., and Cocoanut Grove, Fla., is again in Europe. He is visiting the most important veterinary schools and will spend about six months attending clinics in France and Germany.

Dr. W. C. Sprinkle (T. H. '11) resigned his position as veterinarian for the St. Louis National Stock Yards Company, March 1, after service in that capacity for over two years. Dr. Sprinkle's present address is Oaktown, Indiana.

Dr. William H. Ferguson (Gr. Rap. '05), for the past 23 years a practitioner of Ionia, Mich., has been appointed to the field staff of the State Veterinarian's office. He will be assigned to tuberculosis eradication work in the Thumb district.

Dr. John L. Tyler (Chi. '89), of Baldwin Park, Calif., took over a half interest of his old practice at Pomona, March 1, with Dr. E. R. Sparks, to whom Dr. Tyler sold his practice in 1920. Dr. Tyler's new address in Pomona is 780 West First Street.

Dr. H. L. Campbell (K. C. V. C. '18), of Rochester, Ill., has accepted the position of Douglas County (Ill.) Veterinarian, succeeding Dr. J. A. Erickson, who had to resign on account of poor health. Dr. Campbell will have his headquarters at Tuscola.

Dean V. A. Moore, of the New York State Veterinary College at Cornell University, delivered one of the De Lamar lectures in the School of Hygiene at Johns Hopkins University, in Baltimore, March 7. The title of his lecture was "The Relation of Bovine Tuberculosis to Man."

Dr. I. V. Stoll (U. P. '16), of Rome, Pa., is credited with having invented a "snow automobile," that will climb over snow banks and drifts with ease. The machine is described as having four drive wheels behind and two "sleigh shoes" in front, the rear wheels manipulating a sort of caterpillar tractor.

Dr. W. L. Clark (Corn. '07) has been appointed a director of the Seneca Falls (N. Y.) Hospital. This appointment is a splendid recognition of the veterinarian's place in public health work. Dr. Clark will aid the administration board of the institution in problems related to the use of animal products in the hospital.

Dr. Roberto Plata Guerrero (U. P. '20) has taken up his duties as veterinarian for the Government of Ecuador and is now busily engaged in a program of live stock sanitation and breeding in the five coast provinces of Ecuador. These provinces have their own Bureau of Agriculture which is organized independently of the Bureau of the central government in Quito. Dr. Guerrero is located at Guayaquil.

Dr. F. J. Bolender (U. S. C. V. S. '14), who has been located in San Joaquin Valley for the past five years as field veterinarian for the California State Department of Agriculture, was recently assigned to a better and more desirable territory along the coast of California, consisting of Santa Barbara, Ventura and San Luis Obispo counties. Dr. Bolender's headquarters are now at Santa Barbara.